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Toxicity of Blood Plasma from Tuberculous Patients.—Previous studies have shown that the toxic effect of human blood when inoculated into guinea pigs was greatest in those cases which contained a large amount of fibrinogen. Besides pregnancy, pneumonia, typhoid fever and pulmonary tuberculosis show a quantitative increase in the fibrinogen content of the blood. The latter disease, being of a chronic type, involves a destruction of tissue cells, followed by an attempt on the part of the body to repair the involved area. As the destruction liberates a substance in the blood that may be one of the factors in stimulating the formation of fibrinogen, a study of the plasma of tuberculous patients was undertaken, to see whether the various stages of tuberculosis show any difference as to the amount of fibrinogen present and also if there might exist a difference as to the degree of toxicity in the various stages of the disease. As it has been shown that the fibrinogen content of the blood plasma is increased in those cases having a high degree of sedimentation, a parallel erythrocyte suspension stability test was run, employing the technique of Fahraeus. Guinea pigs were used for the toxicity test, the blood plasma being injected into the jugular vein. Gram's technique was used for determining the fibrinogen content of the blood. Experiments done with blood plasma from patients in various stages of pulmonary tuberculosis showed the average toxic dose to be 0.5 cc. per 100 gm. guinea pig weight, 0.25 cc. per 100 gm. not causing death. This toxic dose is approximately one-half that of normal serum and was found practically the same in the various stages of the disease. It was also observed that the fibrinogen content of the blood plasma taken from the same cases is markedly increased. There was also a definite increase in the rate of sedimentation of erythrocytes which paralleled the severity of the disease; also the increase in the pulse rate and temperature. It is possible, therefore, to associate the quantitative increase of fibrinogen in pulmonary tuberculosis with the degree of activity of the disease, as the fibrinogen factor may be used as an idea of tissue destruction. Especially is this condition pronounced when it is observed that the degree of toxicity depends upon the quantitative increase in fibrinogen. *Conclusions:* The toxicity of the blood plasma in pulmonary tuberculosis is increased for the guinea pig. The pulse, temperature, suspension stability of the erythrocytes and toxicity of the blood plasma parallel each other.—*Studies on the Toxicity of Human Blood Plasma for Guinea Pigs. III. The Toxicity of Human Blood Plasma in the Various Stages of Pulmonary Tuberculosis, S. A. Levinson, J. Immunol., May, 1923, viii, 183.*

Examination of Blood of Tuberculous Senegalese for Tubercle Bacilli.—From each of ten Senegalese with fever and tuberculosis 5 cc. of blood was taken and injected immediately into ten guinea pigs. The virulence of tuberculosis in the negro made it especially probable that the blood might be highly infective. Only one guinea pig developed tuberculosis; the 9 others were killed between 45 and 50 days after inoculation and showed no lesions that could be suspected of being tuberculous.—*Tuberculose chez le noir. Bacillémie, H. Morin and Sondag, Compt. Rend. Soc. d. Biol., April 21, 1923, lxxxviii, 1052.*

Phenomena of Hypersensitiveness.—A new classification of hypersensitiveness states is proposed as follows: *Under Normal Hypersensitiveness:* 1. Dermatitis venenata. 2. Serum disease (ordinary). *Under Abnormal Hypersensitiveness*: 1. Anaphylaxis. 2.

Hypersensitiveness of infection. 3. Atophy (from the Greek, meaning a strange disease). The use of this term can be restricted to the hay fever and asthma group. The hypersensitiveness of infections is exhibited against nonprecipitinogenic substances; for example, tuberculin. In explaining the tuberculin reaction the presence of hypothetical antibodies, in the widest sense of the term, is accepted. The author's acceptance of Bail's successful (?) experiments in the passive transference of tuberculin hypersensitiveness to the normal animal by the injection of crushed tubercle tissue makes it necessary to assume that the antituberculin "antibodies" are present in the tubercle tissues. Since tuberculin sensitiveness does not develop without the formation of tuberculous tissue one must further conclude that the hypothetical antibodies are produced only by tuberculous tissue. They are diffused out of this parent tissue into the other tissues of the body where, also, they are capable of reacting with tuberculin. They are not produced in normal animals by the injection of tuberculin and have not been demonstrated in the blood. With one exception, the uterine muscle, the tissues thus, so to speak, passively autosensitized are not those that are involved in anaphylactic sensitization. The skin is not sensitive in anaphylaxis and the bronchial muscles are not sensitive in the tuberculous guinea pigs. Finally, passive sensitization in anaphylaxis has not been accomplished by the transfer of any tissue of a sensitive animal, excepting blood. The exact reverse of this is true in tuberculin sensitiveness. This partial summary of the facts concerning the antituberculin antibody and the anaphylactic antibody reveals an antithesis that would seem to discourage the attempt to ascribe an antibody-antigen nature to the tuberculin reaction. Nevertheless, this hypothesis appears to be the most promising at present, although further convincing confirmation of the experimental basis of the hypothesis is demanded.—*On the Classification of the Phenomena of Hypersensitiveness, A. F. Coca and R. A. Cooke, J. Immunol., May, 1923, viii, 163.*

Hypersensitiveness Produced by Dead Tubercle Bacilli.—Rabbits which had been sensitized with equal quantities of dead bovine tubercle bacilli were tested at intervals with tuberculin. It was found that general reactivity to tuberculin began to decrease regularly after 30 days and had disappeared at 90 days. But even after sensitiveness to tuberculin was no longer manifest lesions containing a few bacilli and having the anatomical characteristics of tuberculous lesions were found. It is suggested that in actual disease of man and animals extinct lesions may give the same reactions to physical exploration as active foci, though sensitiveness to tuberculin is absent.—*Sur la sensibilité a la tuberculine des lapins soumis a des injections de bacilles tuberculeux morts, A. Bouquet and L. Nègre, Compt. Rend. Soc. d. Biol., April 21, 1923, lxxxviii, 1013.*

Tuberculin Hypersensitiveness.—Young virgin guinea pigs were sensitized with sheep serum, killed 3 weeks later and their uteri tested for contractility with a myograph, surrounded by a *Thyrode* solution at 37°C. and aerated with oxygen. When a 10 per cent horse serum solution was added to the *Thyrode* solution no contractions could be elicited. When a 10 per cent solution of sheep serum was added powerful contractions took place. Uteri of tuberculous guinea pigs tested in the same manner with O. T. never showed contractions. It is therefore proved that hypersensitiveness of the tuberculous organism to tuberculin does not follow the laws of protein anaphylaxis. The same experiment with uteri of tuberculous guinea pigs, but with the proteins of tubercle bacilli instead of O. T., always produced powerful contractions. The tuberculous guinea pig is therefore sensitized anaphylactically toward the proteins of the tubercle bacilli but not toward tuberculin. — *Tuberkulinüberempfindlichkeit und Anaphylaxie, W. Dietrich and F. Klopstock, Klin. Wchnschr., April 23, 1923, ii, 780.*

Anaphylaxis in Tuberculosis.—The anaphylaxis reaction is the reflection form of a focal reaction, which can call forth acute inflammatory changes at the periphery of the focus under the influence of extratuberculous toxins. Focal reactions do not necessarily have to cause a general reaction, while a general reaction must be associated with a focal reaction. The point of attack of the anaphylaxis is not the central nervous system alone, but the specific reflex irritants originating from the focal site liberate the anaphylactic symptoms through the medium of the central nervous system. Allergy is the specific reflex-sensitivity of the organism, the pathologic-anatomic basis of which lies in the focus of an earlier infection.—*Die Anaphylaxisfrage bei der Tuberkulose, S. Somogyi, Beitr. z. Klin. d. Tuberk., July, 1922, lii, 170.*

Tuberculin Reaction Not Anaphylactic.—Zinsser showed how to differentiate the tuberculin reaction from reactions of an anaphylactic nature. The following addi-

tional proofs appear equally conclusive: 1. Sixteen children with measles and a positive tuberculin reaction received diphtheria antitoxin on entering the hospital. At least ten days later they were each tested simultaneously with tuberculin and horse serum. The intracutaneous reaction to horse serum was always positive but the tuberculin skin reaction was absent, as is the rule during the ten or fifteen days of morbid anergy. 2. A series of 20 pregnant guinea pigs were given 3 injections of 5 cc. of horse serum. As a rule tuberculin sensitiveness, and above all the general reaction to intracardial injection, disappears immediately after labor. All these animals endured perfectly an intracardial injection of 0.1 mgm. of tuberculin; the controls, tuberculous males, were all killed by the same dose. Sensitiveness to horse serum was perfectly conserved and the females, resistant to tuberculin, died with all the symptoms of anaphylaxis after an intracardiac dose of 0.1 mgm. of horse serum. 3. Debre and the writer had previously shown that in guinea pigs sensitized toward horse serum an intoxicating intracardial dose of the serum is almost without effect if it be preceded by an intracardial injection of 0.5 gm. of sodium carbonate dissolved in 1 cc. of sodium chloride solution, but that previous injection of sodium carbonate does not prevent the accidents which follow intracardiac injection of tuberculin into tuberculous guinea pigs. Liability to anaphylactic disturbances may, therefore, coexist with resistance to tuberculin and vice versa. In spite of their common symptoms the anaphylactic reactions and the tuberculin reaction are separate phenomena.—*Réactions tuberculiniques et anaphylaxiè, J. Paraf, Compt. Rend. Soc. d. Biol., May 12, 1923, lxxxviii, 1191.*

Behavior of Tuberculin in Body.—When a toxin such as tetanus toxin is injected into a sensitized animal, it rapidly disappears from the circulation, whereas in unsensitized animals the toxin may often be demonstrated in the circulation for a long time after injection. This, however, is not true of tuberculin. When tuberculin is administered parenterally it disappears from the body within 24 hours, regardless of whether the animal was previously infected with tuberculosis or not. Tuberculin, in the dose of 0.5 to 1. cc. was administered by means of intracardiac, intraperitoneal and subcutaneous injections to normal and tuberculous guinea pigs, as well as to some which had previously received tuberculin. Twenty-four hours after the animals had received the tuberculin, the serum was removed and injected either subcutaneously or intracutaneously into a child known to be highly sensitive to tuberculin. Controls received 0.01 mgm. tuberculin and a similar amount of tuberculin which had been mixed and incubated with the normal animal serum. The controls always showed definite reactions, but the serum of the previously tuberculin-treated guinea pigs at no time gave a specific reaction. In other words, whereas the active serum never neutralized the tuberculin, in the body the tuberculin was quickly detoxicated, and could not be detected in the serum, liver, lungs or urine.—*Über das Verhalten des Tuberkulins im Organismus, K. Peyrer, Ztschr. f. Kinderhk., April, 1923, xxxv, 202.*

Antibodies in Tuberculous Sputum.—A recent examination of tuberculous sputa for antibodies, which were said to be found there by Karwacki and Otto in 1911, has produced but 3 doubtful cases of complement fixation in an investigation of sputa from 15 patients. The other 12 sputa failed to fix complement, both with egg antigen and the methyl antigen of Boquet and Nègre.—*Sur la recherche des anticorps tuberculeux dans les crachats, J. Valtis, Compt. Rend. Soc. d. Biol., 1923, lxxxviii, 1067.*

Tubercle Bacilli in Feces.—The occurrence of tubercle bacilli in the stools of tuberculous patients is important in those, particularly in children and old people, who swallow their sputum. It is also important from a sanitary standpoint to know whether tubercle bacilli are present in the stools. It is possible that excretion of bacilli in this way may account for the frequent failure of complete cure of open pulmonary tuberculosis for, with the swallowing of expectoration, new sources of infection are created in the intestine. A review of the work of other investigators shows the presence of tubercle bacilli in the stools of from 75 to 100 per cent of those with positive sputums. *Technique:* Is based on the principle of bringing the tubercle bacilli in a pellicle to the top of the centrifugated stool. For this purpose benzoin and ether are used. A whole morning stool is collected in a sterile basin. From 30 to 50 gm. of feces are slowly emulsified with normal salt solution until the feces are in a semifluid state. The emulsion is then filtered through sterile gauze into two centrifuge tubes and 2 cc. of an equal part-mixture of benzoin and sulphuric ether are added to each tube. The tubes are covered with rubber caps and centrifugated for 15 to 20 minutes at high speed. Smears are then made from the floating pellicle and stained in the usual manner. *Results:* 126 stools gave the following results: in 103 with positive sputum 98 feces were positive; in

11 with negative sputum but all clinically tuberculous, 3 feces were positive. In twelve clinically nontuberculous and with negative sputum the stools were all negative. Six positive stools, after treatment with weak sulphuric acid, were given guinea pig inoculation. Three gave positive results showing that these are pathogenic microörganisms, and not nonpathogenic acid-fast bacilli, such as the butter bacillus, which might be introduced in the food. According to Rittel-Wilenko, the presence of tubercle bacilli in the stools is always associated with an intestinal lesion; but other observers, in the absence of symptoms indicating any foci in the intestines, believe the bacilli to be derived from the swallowed sputum. However, in advanced cases of tuberculosis, and such were the cases of Rittel-Wilenko, the intestine is practically always involved. The author believes that in those cases in which the intestinal tract is involved, the stool is loaded with bacilli and they appear numerous in the microscopic field whereas, when the bacilli originate from swallowed sputum the microscope shows only a few in the field.—*The Occurrence of Tubercle Bacilli in the Feces of Tuberculous Patients, B. M. Fried, Boston M. & S. J., May 10, 1923, clxxxviii, 735.*

Tubercle Bacilli in Feces.—Patients with tubercle bacilli in the sputum invariably have tubercle bacilli in their stools. Conversely, patients who have tubercle bacilli in the feces, in the absence of tuberculosis of the intestine, have tubercle bacilli in the sputum. In cases in which sputum is not obtainable a diagnosis may be established by examination of the feces. The number of bacilli in the stools is in direct proportion to the number in the sputum. Simple smear preparations from solid stools are usually sufficient for examination; when the number of bacilli is small the antiformin method can be used. Positive results on stool examination in suspected intestinal tuberculosis are of value only when controlled by unmistakaole clinical signs.—*Ueber Tuberkelbazillenbefund im Stuhl, K. Nüsssl, München. med. Wchnschr., March 23, 1923, 357.*

Filterable Forms of Tubercle Bacillus.—Bacilli, which had lost their acid-resistance and assumed atypical forms through having been grown in potato-broth without glycerine, took on, after 18 transplantations, zooglea forms, some granular and others more or less branched. These forms are filterable, and after passing through the filter they may be resown on Petroff's medium and produce cultures composed of acid-resistant bacilli. The filterable forms stain well by Ziehl in the cold and with phenolized gentian violet. They do not take Gram's stain and are not acid-resistant.—*Étude sur la forme filtrante de certains bacilles tuberculeux, A. Vandremer, Meeting Soc. d. Biol. d. Par., June 7, 1923, Reported in Presse Méd., June 13, 1923, no. 47, 534.*

Action of Salts of Rare Earths on Growth of Tubercle Bacillus.—New experiments confirm conclusions previously published, that phosphorous, sulphur, potassium and magnesium are indispensable to the growth of *B. tuberculosis*. Concerning the salts of the rare earths, which have led to contradictory findings, it has been ascertained that they favor growth in synthetic glycerinated media sweetened and neutralized, and retard growth in the same media not neutralized. In media witout glycerine their action varies with the concentration of sugar and the reaction of the medium. The salts of iron increase growth in media containing sugar and glycerine whatever be the reaction of the medium, but if glycerine is lacking, growth is increased in an acid and diminished in a neutral medium by the addition of iron.—*Nutrition minérale du bacille tuberculeux. Action favorisante ou empêchante des sels de terres rares, A. Frouin and M. Guillaumie, Compt. Rend. Soc. d. Biol., July 7, 1923, lxxxix, 382.*

Auto-Activation of Growth of Tubercle Bacilli.—A filterable substance produced by the tubercle bacillus accelerates growth in cultures of the bacilli when added in very small quantities; larger amounts mask this activating effect. The substance is not specific; derived from human, bovine, or avian bacilli it acts interchangeably on the growth of all these forms. Substances derived from yeast and moulds have the same action; blood also has an activating effect. The action is increased by heating to 100°; it is abolished by dry heat at 170° for one hour. The activating agent appears to belong to the group of auximones described by Mockerbridge and Bottomley, and since then found by Goy in various microbes. Owing to the minute quantities which are effective, only very pure chemicals and glass forged at 180° should be used. —*Facteurs accessoires de la croissance du bacille tuberculeux, A. Borrel, L. Boez and A. de Coulon, Compt. Rend. Soc. d. Biol., June 16, 1923, lxxxix, 191.*

Interpretation of Atypical Forms of Tubercle Bacilli.—Studies made upon micrococci, vibrios, bacilli with and without spores, and in particular upon the free granules of tubercle bacilli, show that the

morphological changes represented in their involution always take place in a definite direction. They may all produce elongated and granular forms; branched forms are more rare, and are met oftenest among tubercle bacilli and analogous forms of the mycobacteria. The atypical forms contain all the elements of normal forms; the "free granules" originate in the nuclear granules and they may be called "free nuclear granules." Atypical forms rapidly return to the normal form during passage through animals or through fresh media. The evolution of atypical forms in a determinate direction appears like atavistic behavior, and the production of elongated and branched forms and of free granules makes it seem probable that the bacteria are related to the moulds.—*Sur la morphologie et mode de developpement des formes atypiques des bacteries, A. Kirchenstein, Compt. Rend. Soc. d. Biol., March 17, 1923, lxxxviii, 716.*

Tubercle Bacillus Only Relatively Aerobic.—Although we are accustomed to consider growth in contact with the air as the typical mode of development for the tubercle bacillus, there are many facts which suggest that anaerobic growth may be more normal for it. This is especially apparent when cultures are made direct from serous effusions and tuberculous organs. Tuberculous effusions often give direct cultures without the addition of nutritive substances. If the initial acidity of such effusions is preserved by the addition of a dilute acid or an acid salt, the tubercle bacillus multiplies and the colonies always develop below the surface, upon the walls or at the bottom of the tubes. Also, implantations of the blood of tuberculous guinea pigs, or of triturated organs made into peptonized albumen and other liquid media, give colonies which appear first in the liquid, upon the clot or the submerged organs. Growth in the pellicle, when one is formed, comes later and appears to wait on adaptation of the bacilli to an aerobic environment. Development is not arrested by a layer of oil of vaseline, or by driving off the air before inoculation. When a vacuum is produced, or when the pellicle covers the surface of the liquid perfectly, growth is arrested. Bacilli grown beneath the surface preserve their acid-resistance and their morphological characters; they produce no odor and do not appreciably change the reaction of glycerine or glucose media; their vitality and virulence seem to be retained longer than by bacilli grown at the surface: cultures incubated under oil for 15 and 17 months produced generalized tuberculosis when injected subcutaneously into guinea pigs. In these culture liquids there seems to be no greater production of tuberculin or of substances toxic for guinea pigs than there is in culture liquids beneath a skin.—*Sur la relativité du caractère aérobie du bacille tuberculeux, E. Buc, Compt. Rend. Soc. d. Biol., May 5, 1923, lxxxviii, 1135.*

Antigenic Properties of Lipoids from Tubercle Bacilli.—Doubt expressed in various quarters that the phospho-lipoids derived from tubercle bacilli give rise *in vivo* to an abundant production of antibodies has led to further testing of this assumption. The antigenic properties claimed for these substances have been attributed to protein impurities or to proteins conjugated with the lipoids and having the same general properties of solubility as the chemically definite phosphatides. To answer these objections it was necessary to test the properties of these bacillary phosphatides by methods more delicate than those of chemical analysis. Rabbits and guinea pigs were injected with methyl alcohol extracts of tubercle bacilli which had been previously treated with acetone. The extract, freed of alcohol, and emulsified in distilled water, represented in an initial weight of 10 cgm. of fresh bacilli. Three weeks later the animals were tested for hypersensitiveness. None of them showed either delayed or immediate symptoms of having been sensitized toward extracts prepared in the same way, toward an acetone extract of bacilli, toward lecithin direct, or toward crude tuberculin. A second series of tested animals showed that previous injection of tubercle bacilli, living or dead, did not produce sensitiveness toward these extracts of bacillary lipoids. Inasmuch as bacillary proteins not only cause antibody production, but in extremely small doses sensitize animals toward subsequent protein injections, it may be deduced from these experiments that, whether or not those bacillary substances, soluble in methyl alcohol and insoluble in acetone, are pure and definite phosphatides, their antigenic properties *in vivo* are independent of proteins which may be present with them, and that the production of antibodies, of which the very considerable amount can be shown by complement fixation, is effected by the phospho-lipoids.—*Sur les propriétés biologiques des lipoïdes du bacille de Koch, A. Boquet and L. Nègre, Compt. Rend. Soc. d. Biol., June 13, 1923, lxxxix, 138.*

Defatting of Acid-Fast Bacilli in Vivo.—Previous successful results in the treatment of leprosy with salts of the unsaturated fatty acids of chaulmoogra and cod-liver oils are mentioned. In summarizing his

results the author considers that the good effect of such substances must, in some way, be due to a chemical reaction with the fatty acids in the coating of the acid-fast bacilli, so weakening their protective envelopes as to allow the body cells to deal with them, while the breaking down of the bacili in the body may lead to the formation of immunizing antigen in the system. As the addition of sodium gynocardate and sodium morrhuate to a pancreatic extract had the effect of doubling the fat-splitting powers of the pancreatic lipase, it is suggested that a direct stimulation of tissue lipolysis may in part explain the therapeutic effect of these substances. In support of this view the examination of the serum of a considerable number of cases of leprosy revealed the fact that, whereas the untreated cases showed an extremely low lipase content, the treated cases approximated normal. Serum lipase estimations in a number of cases of surgical tuberculosis indicate that patients with a low lipase content are usually those who are not doing well. Tests are now being made, following treatments with chaulmoogrates and morrhuates, to see whether the lipases are raised by these drugs. The results so far obtained in leprosy appear to support the view that this class of preparation acts by increasing the blood lipase, which in turn dissolves the coating of the acid-fast bacillus of leprosy, and probably also of tubercle, thus setting free immunizing antigens. The author "appears to have obtained in leprosy and possibly in surgical tuberculosis, defatting of the causative bacteris *in vivo*,"—*Note on "Defatting" of the Acid-Fast Bacilli of Leprosy and Tubercle by Injections of Chaulmoogrates and Morrhuates, L. Rogers, Brit. M. J., July 7, 1923, no. 3262, 11.*

Absence of Free Fatty Acids in Tubercle Bacilli.—A number of workers have announced the finding of free fatty acids in tubercle bacilli, and many important considerations are involved in the question whether these bacteria do actually produce free fatty acids. Studies of the intravital action of fatty acids, particularly of oleic acid, are motivated by a supposed analogy between the action of such injected fatty acids and of tubercle bacilli. Studies on acid-resistance are also based upon the hypothesis that the resistance may be due to the fatty acids. Grown on a synthetic medium in which nitrogen is furnished only by asparagin, tubercle bacilli do not acidify the medium. In the absence of glycerin the human type of bacillus tends to alkalinize the culture, but in these conditions the fat content diminishes from 60 to 80 per cent. Bacteria were grown on synthetic media to which were added 5, 10, 20 and 40 gm. of glycerin to the litre. In cultures of 10 and 21 days the hydrogen pressure was determined and it was found that all the culture media had become more alkaline. Bacteria on glycerinated peptone-bouillon or on synthetic media were incubated 25 to 35 days, the bouillon decanted off and replaced with anhydrous acetone. After standing four days at room temperature the acetone was filtered and evaporated. The residuum, dissolved in alcohol, contained no trace of fatty acids. After standing in acetone the bacilli were extracted with boiling absolute alcohol in which no acid reaction was produced. The previous findings of fatty acids are to be explained on the ground that cultures sterilized by heating, or bacilli from which tuberculin had been prepared, were used; the sterilization and the concentration of glycerinated bouillon saponified part of the glycerides. The fatty acids previously found are, then, it seems, products of the technical procedure employed to discover them and not constituents of the bacilli. Search will hereafter be made to learn whether the phosphatids, said to come from the fats, may also not result from the operations to which the bacilli are subjected.—*Absence d'acides gras libre dans le bacilli tuberculeux, A. Frouin and M. Guillaumie, Compt. Rend. Soc. d. Biol., June 30, 1923, lxxxix, 319.*

Errors in Lung Examinations.—There is a large group of persons in whom a positive diagnosis of pulmonary tuberculosis has been made erroneously on insufficient and inconclusive evidence. Such diagnoses are almost invariably supported by descriptions of nonexistent or misinterpreted physical signs. While the earliest possible diagnosis is highly desirable, one should have sufficient grounds before calling an individual tuberculous. Patients with merely suggestive histories and symptoms may be regarded as suspects and kept under observation with such therapeutic measures as are indicated, undamaged by a premature diagnosis of tuberculosis, with all that it implies as regards future life, social status, residence, employment and earning capacity. The possibilities of damage by reasonable delay are insignificant. The acute case will quickly become apparent, while a few weeks' delay in the slow chronic case will not affect the outcome. In much of the literature super-refinements of diagnostic acumen have been overemphasized, and the effect has been to spur the examiner to an uncritical acceptance of symptoms and an attitude of receptiveness to doubtful physical findings, or even to discover signs

which do not exist. Bushnell has recently stated that in nearly one-quarter of the admissions to tuberculous hospitals from the United States army, the diagnoses was not confirmed. Accurate and critical physical examination is a first essential. Considering first misinterpretation of normal physical signs, the shorter and higher pitched note of the right apex is the principal source of error. Minute and symmetrical changes in the percussion note are of no diagnostic value, while narrowing of Kronig's isthmus, or even definite apical dulness, may be present without change in structure of the underlying lung. Muscular contraction or tenseness is a frequent source of error. The two main sources of mistake in the interpretation of breath sounds are the normally present bronchovesicular breathing on the right side down to the second rib and third dorsal spine, and noisy respiration, which produces bronchovesicular breathing throughout the chest. This emphasizes the necessity of first seeing to it that the patient is breathing properly. Finally, there is much confusion in the terminology of both breath sounds and râles, with no commonly accepted standards. Most important is auscultation after cough, but these "provoked" râles may not appear if the procedure is not correctly carried out, that is, expiration must be completed before the cough. The râles often occur at the end of the expulsive effort, but also may occur in large numbers at the beginning of the following inspiration. The most plausible explanation is that of the separation of moist surfaces and breaking of fluid films. Cartilaginous or joint sounds during inspiration are not infrequent in certain localities, including the interscapular region. Marginal sounds, heard at the bases, are, as Bushnell has shown, due to the separation of the moist surfaces of the diaphramatic and mural pleurae, as the lung peels from the chest wall. In vigorous breathers they occur in showers and may have a consonating quality. Any single sign of increased pulmonary density, especially at the apices, unaccompanied by other evidence, must be regarded as insufficient. Basal bronchitis without upper lobe involvement must be proved tuberculous by the laboratory before such diagnosis can be made.—*The Common Sources of Error in Lung Examinations, E. A. Duncan, J. Am. M. Ass., April 28, 1923, lxxx, 1213.*

Elicitation and Evaluation of Physical Signs in Pulmonary Tuberculosis.—Discussions of technique in conducting physical examinations are rare. Mistakes in diagnosis are about equally divided between failure to detect physical signs and erroneous interpretation placed on those elicited. Only certain salient points are here considered. It is important to ascertain first the position of the apex heat, particularly because of its displacement by diffusions. Inspection of the chest, if properly carried out, is valuable. Unilateral apical retraction suggests an old process with fibrosis. Inspiratory lagging is important and the delay in the initiation of the inspiratory act can be seen graphically under the fluoroscope. The inspiratory lag is best elicited by placing the hands over the upper lobes. Percussion in the diagnosis of early tuberculosis is much less trustworthy than auscultation, and the heavy blow necessitated by distracting noises is quite valueless. The descent of the lower lobes with quiet and deep breathing should always be ascertained. Percussion of the supraclavicular space is simplified by dividing it with a pencil into two or three sections. The most significant auscultatory findings are râles. It is surprising and unfortunate that, although described a hundred years ago, no agreement in terminology has been attained. In the early cases of tuberculosis there is not enough secretion to be set in motion by quiet breathing. If the reserve air is expelled, however, by a forced expiration terminating in a cough, the air vesicles will be compressed and their mucus-coated surfaces approximated; with the succeeding inspiration these walls are suddenly separated and râles are produced. Bray has found that while only 23 per cent of incipient cases exhibit râles on deep breathing alone, they could be demonstrated in 76.5 per cent employing expiration and cough. Even in advanced cases only 27 per cent show râles without cough. Where they are heard they occupy the middle and latter part of inspiration. If such a patient breathes out and coughs the râles are heard either with the act of coughing or the moment inspiration starts, and they continue throughout. The râles of an early case of tuberculosis are slightly moist, relatively small and mostly of the same size. In the more chronic case the size is inconstant and large and small râles are intermingled ("indeterminate râles"). The chief sources of confusion are atelectatic râles, which are heard at the end of forced inspiration and disappear on deep breathing; clicking sounds produced by swallowing after cough; marginal râles occurring in the lateral and anterolateral aspects of the chest, especially in long slender persons, often below the level of the transverse mammary line, always bilateral, relatively dry, heard first above and moving downward, and disappearing after several deep inspirations. Whether due to the expansion of compressed air in the lower part of the lung or to the

stripping off of the diaphragmatic from the parietal pleura, as Bushnell believes, they are not pathological and many an unwarranted diagnosis of tuberculous pleurisy has been made on the strength of these sounds. They ought not to be confused with the crepitant râles of early lobar pneumonia. One area often overlooked on examination is the upper axilla, well under the lower edge of the pectoralis major. It is not an uncommon site for the first signs of a tuberculous lesion. The physical signs should always supplement a careful study of the history and symptoms. A definite diagnosis of tuberculosis is unwarranted unless supported by a history of hemoptysis or pleurisy with effusion, or accompanied by persistent râles in the upper third of the lung, a parenchymatous roentgen ray lesion, or bacilli in the sputum. In this country nearly one quarter (23 per cent) of 18,713 soldiers admitted to tuberculosis hospitals were found to be nontuberculous (Bushnell). Hemoptysis, not associated with mitral stenosis, should always be considered due to tuberculosis, even in a robust, apparently healthy person. At Trudeau a definite roentgen ray lesion was found in 90 per cent. Concerning the other 10 per cent Baetjer says that lungs apparently clear on the first examination following the hemorrhage have six or eight months later shown definite tuberculous changes. The necessity of sputum examinations, repeated if necessary, is again emphasized. They may save the expense of the roentgen ray examination in the case of a poor patient. Extensive physical signs and repeatedly negative sputum almost certainly exclude tuberculosis.—*The Elicitation and Evaluation of Physical Signs in the Diagnosis of Pulmonary Tuberculosis, H. F. Stoll, J. Am. M. Ass., June 9, 1923, xxx, 1659.*

Value of Symptoms in Early Diagnosis of Pulmonary Tuberculosis.—The utility of inspection and percussion has been especially developed by Americans. Now that special attention is being paid to the muscle reflex which results in what is known as "lagging" (the presence of which, especially at an apex, strongly suggests active mischief, though percussion and auscultation may give no indication of this), inspection and palpation assume a more important place. The technique of percussion has been improved and now it is recognized that it must be light. The presence of fever, as an indication of tuberculous toxemia, is of the greatest value, but certain qualifications are necessary if we are to arrive at trustworthy conclusions. The necessity for a continuous temperature record, lasting over a period of three to four weeks in any cases of suspected tuberculosis, will become apparent when it is pointed out that the toxemia state is by no means constant; it ebbs and flows. Much attention should be paid to an early morning temperature, taken before rising, which is constantly a little above the average mean. Absence of fever does not rule out the possibility of the existence of pulmonary tuberculosis. Tachycardia is of frequent occurrence in early tuberculosis. Like fever it is of toxic origin and appears to be the result of excessive stimulation of the sympathetic nervous system. Increased pulse rate after exercise, falling more slowly than usual, is a sign of activity, thereby paralleling the temperature.—*A Note on the Value of Symptoms in the Early Diagnosis of Pulmonary Tuberculosis, D. G. M. Munro, Brit. M. J., May 19, 1923, no. 3255, 851.*

Vital Capacity in Hyperthyroidism and Influence of Posture.—There seems to be a fairly definite ratio between the vital capacity in the upright and recumbent positions, which is about as 107.5 to 100. By using this factor to multiply the reading taken in the recumbent position the calculated vital capacity was usually obtained in normal men and women. In a graphic chart is shown the general relation in patients with hyperthyroidism between the decrease in vital capacity and the severity of the disease, as estimated by the basal metabolic rate. All patients having a vital capacity of 40 per cent or under were bedridden. In only a few cases were the readings within the normal ± 10 variation. The method of obtaining the body surface was that of DuBois and DuBois.—*The Vital Capacity in Hyperthyroidism with a Study of the Influence of Posture, I. M. Rabinowitch, Arch. Int. Med., June, 1923, xxxi, 910.*

Criteria of Activity of Pulmonary Tuberculosis.—There are five bases for the estimation of activity in pulmonary tuberculosis: (1) palpatory, (2) radiological, (3) auscultatory, (4) laboratory methods and (5) symptomatic. The first is but little used and the second is growing more and more in worth as a diagnostic aid. Often it shows lesions where the physical signs have been missing. However, many patients have been declared to be actively tuberculous by radiologists when their subsequent history shows them merely to be harboring a tuberculous infection. The roentgen ray as the sole evidence of activity in tuberculosis should not be relied upon. The appreciation of activity by auscultation is the method that is most commonly relied upon, and that which in the long run will be found to be the most serviceable to the greatest

number of physicians. The value of the finding of tubercle bacilli in the sputum is a commonplace. It is not evidence of activity. The Arneth differential index, while generally corroborative, is a method too unreliable to secure for itself a place among the true criteria of activity. The complement-fixation test is by no means all that it should be. This brings one to symptomatology, which furnishes the most valuable evidence of activity. A patient whose temperature is lessening, whose pulse is slowing up, whose appetite and sleep are growing better, whose weight is going up, must be and is improving, even though his cough and expectoration are unaffected and physical signs stationary. Usually the cough and expectoration do improve. Three cases are cited to bring out the points noted above and mainly to denote the value of symptoms over the other criteria.—*The Clinical Criteria of Activity in Pulmonary Tuberculosis, P. H. Ringer, Amer. J. M. Sc., May, 1923, clxv, 742.*

Supraclavicular Depressions in Diagnosis of Tuberculosis.—Supraclavicular depressions, particularly if unequal or unilateral, are generally regarded as suggestive of tuberculous disease at the apex of the lung, and are mentioned in the recent classification adopted by the American Sanatorium Association. In attempts to estimate the value of this sign, however, observers have failed to recognize the significance of similar depressions in healthy persons. This is important because the relative value of a sign in disease decreases proportionately with its frequency in health. With this point in mind, comparative studies were made of the incidence, distribution and depth of the supraclavicular depressions in 153 healthy adults and 150 patients with incipient pulmonary tuberculosis. In the healthy series, mostly between the ages of 18 and 35, clinical history and physical and roentgen ray examinations failed to reveal evidence of pulmonary disease. Occupational and traumatic deformities were excluded. The following impressions were gained: 1. The depressions are more evident in the lean than in the well nourished. They may appear with loss of weight and disappear with gain in weight. The changes are more marked in women. 2. The depressions are usually deeper when the neck muscles are well developed, and contraction of these muscles deepens them. 3. They are notably influenced by the size and shape of the clavicle and its position. When the person is seated and shoulders brought forward the depressions are deepened. Among the 153 healthy persons, the depressions were absent or negligible in about 25 per cent; unilateral depressions occurred in about 21 per cent, the right side showing 18 per cent and the left 3 per cent; while in 54 per cent bilateral depressions were found, equal in 28 per cent, unequal in 26 per cent. In the group of patients with incipient tuberculosis the lesions were confined to the region of the apices. The sputum was positive in about 32 per cent. There was no significant difference in nutrition between this and the healthy group. In about 20 per cent the depressions were absent; in about 47 per cent bilateral and in about 30 per cent unilateral. Attempts to correlate the depression with the site of the lesion proved unsuccessful. Even in patients with moderately advanced disease it is apparently not possible to establish any definite relation between the distribution of the disease and the depressions. In a group of 169 such patients, the depressions were absent in 24 per cent and in those who did present them no definite relation could be established between them and the site and extent of the lesion. *Comment:* When supraclavicular depressions were considered a constant sign in pulmonary tuberculosis the diagnosis was usually delayed until the pulmonary lesion was advanced and the patient emaciated. The major rôle in their production was probably played by the tilting forward of the shoulders from weakness, and by emaciation. That depressions invariably appear with emaciation has long been recognized by anatomists and even dressmakers. When depressions have their origin in disease of the underlying lung, they are due to loss of lung volume, associated with local retraction of the chest wall. This hardly ever occurs in early disease, as the loss of lung volume is usually compensated by contiguous emphysema or hypertrophy. Therefore, except possibly in rare instances, supraclavicular depressions are of questionable value in the diagnosis of early pulmonary tuberculosis.—*Supraclavicular Depressions in the Diagnosis of Early Pulmonary Tuberculosis, H. A. Bray and A. H. Duerschner, J. Am. M. Ass., June 9, 1923, lxxx, 1670.*

Origin of Stertorous Breath Sounds.—All the conceptions on the origin of stertorous breath sounds are reviewed. The pulse rhythmicity of the condition made it seem likely that there was an anatomic relationship between the heart and lung in this condition. A critical study was therefore made of the roentgenographs of cases of stertorous breathing and evidence found of pericardial-pulmonary adhesions. These adhesions were then found in 3 postmortem cases in whom stertorous breathing had been found

clinically. The stertorous breathing is explained as a transmission of the cardiac movements to the adherent lung. On the basis of this, the persistence and the localization of the stertorous breathing in the vicinity of the cardiac base is understood. The cardiopulmonary adhesions it is believed also explains a part of the accidental cardiac murmurs heard.—*Über die Entstehung des saccadierten Atemgeräusches, R. Peyrer, Beitr. z. Klin. d. Tuberk., June, 1922, lii, 62.*

Clinical Demarcation of Pulmonary Tuberculosis.—The X-ray reveals types of pulmonary tuberculosis which can, by means of certain earmarks, be defined. As a result of systematic observations it was possible to limit the types, and correlate them with individual symptomatology and characteristic clinical values. The nodular, and later a grape-cluster form of bronchiolitic nodule, is the primary unit of pulmonary tuberculosis which in the roentgen picture is revealed as a definite shadow. The solitary nodule is seen as an isolated dark, circular, sharply demarcated shadow, mostly combined with other opacities. Most, or probably all, isolated round shadows are designated as calcified tuberculous glands. Miliary tuberculosis produces delicate shadows,—small speckled disseminated tuberculosis of the lungs. The clinical picture is recognized by the irregular high temperature, with dry cough, dyspnea and indefinite lung signs. There exists also a favorable hematogenous seeding of small nodules,—the chronic, small, speckled, disseminated pulmonary tuberculosis (*peribronchitische Knötchentuberkulose*) with sharply defined shadows. Clinical symptoms are scanty. The nonulcerating, chronic, small, speckled, disseminated pulmonary tuberculosis reveals small disseminated shadows, dense and sharply defined, and larger and more irregularly shaped than the malignant miliary tuberculosis. The prognosis is variable, but mostly favorable. The ulcerative, chronic, small, speckled disseminated pulmonary tuberculosis reveals cavities (abnormal, circular clear zones). In 50 per cent contraction changes are visible roentgenologically. The patients are weak and have toxic symptoms and a low blood pressure. *Thorax paralyticus* is common and the auscultatory findings are widespread. Peribronchial nodular tuberculosis shows dense strands and retractions in the vicinity of the bronchi. The prognosis is good and the course is outspokenly chronic while the general toxic symptoms are slight. The large nodular pulmonary tuberculosis shows scar tissue involvement, with extensive shadows, and leads to nodular pulmonary indurations. Frequently there are exudation, inflammation and lobular caseation of individual nodules. The exudative processes in the roentgen plate show softer shadows with diffuse borders. The character of this group as a whole is malignant. Contractions are visible; commonly the tendency is toward cavitation. Weakness, pallor and drop in blood pressure are frequently noted. The auscultatory signs are numerous. Frequently incipient tuberculosis of the apices, due to the uniform shadowing, is without characteristic roentgenological earmarks. The processes are variable, and the roentgenological findings are not easy of determination. Tuberculosis originating at the hilum reveals poorly limited shadows, diminishing to the periphery. Widespread fibroid, cirrhotic pulmonary tuberculosis has, clinically, few auscultatory findings, asthmatic symptoms, rarely fever, no cachexia and frequently contraction of the chest. Roentgenologically it presents a diffuse, flat intense shadowing, with displacement of the organs. Progression, the tendency to loss of fever with bed rest, the prevalence of night sweats, Pirquet reactions, pulmonary hemorrhages, rigidity of the thoracic muscles, the incidence of fever, and the average expectoration of the various classes are charted in percentages, besides the frequency and the mortality of the various forms. The original should be consulted for details.—*Die klinische Abgrenzung der Lungentuberkuloseformen, H. Gerhartz, Beitr. z. Klin. d. Tuberk., April, 1922, li, 252.*

Relation of Affected Side to Clinical Course of Pulmonary Tuberculosis.—In 74 fatal cases of pulmonary tuberculosis it was found that the course of the disease is very markedly shorter in left-sided affections. When the involvement of one lung is extensive no such difference is noticed. Extensive involvement of the left lung exceeds greatly that of the right. Women with left-sided involvement have a very short course of the disease, while men with a right-sided involvement live the longest. The spread of the disease in the left lung is more rapid than in the right. The reasons for the marked differences in behavior of tuberculous infection in both lungs are mainly the anatomic differences of the lungs. The diameter of the bronchi is smaller in the left lung than in the right. The main bronchus of the left upper lobe runs a course almost perpendicular to the trachea, while it runs parallel to the main stem in the right lung. This is of great significance as it is known that right apical tuberculosis is more frequent than left. The right lung is trilobar and has two fissures while the left

has two lobes and one fissure. The left lung is in intimate contact with the heart and the heart beats constantly, transmitting to it this beating and thus certainly stimulating activity of the foci of infection in the left lung.—*Statistischer Beitrag zur Beziehung zwischen der von phthisebefallenen Lungenseite und dem Krankheitsverlaufe, K. Aoyama, Ztschr. f. Tuberk., April, 1923, xxxviii, 22.*

Tuberculous and Nontuberculous Pulmonary Apical Catarrh.—The origin of "pulmonary apical catarrh" on a tuberculous basis is without doubt established. Studies at the postmortem table leave no doubt concerning this and have also established the favorable prognosis of this condition. A tuberculous reinfection is being dealt with, and almost always there is found a typical healed primary lung complex besides the existing apical changes. But recently Liebermeister has called attention to nontuberculous apical affections. There are apical bronchopneumonias, with or without influenza infections; etiologically, pneumokonioses must be considered, in which the most marked changes occur in the apices (chemical-fibroid inhalation-bronchopneumonias). The diagnosis of pulmonary apical affections is attended with difficulties, since hemoptysis can occur without a tuberculous pulmonary process existing. As an interesting case, clinically, is given the autopsy report of an old woman with an outspoken, nontuberculous, bronchopneumonic focus in the apex of the right lung. At the same time there was found in the right upper lobe, below the apex and separated from the above focus, a fibrous encapsulated, calcified tuberculous nodule, hazelnut in size, and there were present calcified, anthracotic enlarged regional lymph nodes. The lungs were otherwise normal and slightly emphysematous. Etiologically the presence of coal dust might be considered as accounting for the presence of the apical process.—*Über tuberkulösen und nicht tuberkulösen Lungenspitzenkatarrh, G. Töppich, Beitr. z. Klin. d. Tuberk., July, 1922, lii, 166.*

Significance of Dilatation of Pulmonic Area of Heart.—In certain intrathoracic conditions the pulmonic area of the heart is enlarged and this is evidenced upon fluoroscopic examination. The usual etiological factors are cardiac disease, especially mitral and acute pulmonary disease, and especially following influenza and tuberculosis. Some dilatation of this area can be produced physiologically by repeated coughing without inspiring. Without precise cardiac measurements the "infantile heart in adult life" cannot be considered seriously.—*The Dilatation of the Pulmonic Area of the Heart and its Significance, J. A. Honeij, Arch. Int. Med., June, 1923, xxxi, 866.*

Diaphragmatic Pleurisy.—Capps demonstrated in 1911 that the visceral pleura is not endowed with pain sense and that the parietal pleura is richly supplied with sensory fibres from the intercostal nerves; that irritation of the parietal pleura produces pain that is accurately localized over the spot irritated; that the diaphragmatic pleura receives its nerve supply from two sources, the phrenic nerve end and the lower six intercostal nerves. The latter supply the peripheral rim of the diaphragm anteriorly and laterally and its first third, posteriorly the phrenic nerve supplies the central segment, and when this portion is irritated the pain is referred to the skin and tissues supplied by the third and fourth cervical nerves, from which part of the cord the phrenic nerve originates. Irritation of the portion supplied by the intercostal nerves produces pain over the lower third, epigastrium and at times the abdomen. Recently Capps and Coleman demonstrated that irritation of the diaphragmatic peritoneum produces referred pains almost identical with those produced by irritation of the diaphragmatic pleura. Clinically, the onset of a pneumonia with severe pains in the abdomen has been noted innumerable times, especially in children. At the onset of pneumonia in adults pain will frequently be present in the abdomen, shoulder, or side of the neck. The middle third of the trapezius edge is frequently hyperesthetic. This symptom was present in about 70 per cent of cases. The next area of tenderness in point of frequency was in the abdomen (68 per cent), the usual location being a rim several centimetres wide below the costal margin. There is actually a rim of tenderness along the rib margins from spine to xiphoid. The entire half of the abdomen on the affected side may be involved, and in five patients there were marked pain and tenderness over the right lower quadrant, with muscle spasm and rigidity. A very striking symptom present in 20 per cent of patients is hyperesthesia and hyperalgesia of the skin, especially in the lower chest, axilla, and upper abdomen. Other areas at times involved were the interscapular spaces, flanks, lower abdomen, lower half of the breast and scattered areas in the back, especially about the angle of the scapula. Acute diaphragmatic pleurisy may occur alone or associated with pneumonia, often without any evident involvement of the costal pleura. In only 18 per cent of patients were friction rubs heard,

these being due to involvement of the costal pleura. In 20 per cent of cases the onset of pneumonia is heralded by symptoms of diaphragmatic pleurisy. The diagnosis should not be difficult. Following a history of respiratory symptoms there appear the characteristic areas of pain and tenderness. Most of the difficulty will lie in the differentiation of upper abdominal disease. The roentgen ray has failed to furnish as much aid as was expected. In acute cases there may be a lagging of the diaphragm on the affected side, as seen under the fluoroscope, while in the chronic cases distortions are frequent, due to adhesions. Relief from symptoms is usually obtained by tightly strapping the lower chest.—*Diaphragmatic Pleurisy, H. B. Weiss, J. Am. M. Ass., June 9, 1923, lxxx, 1664.*

Gastrointestinal Disturbances in Early Pulmonary Tuberculosis.—Among symptoms referable to pulmonary tuberculosis those from the gastrointestinal tract are important. A slightly coated tongue, often constipation, occasional diarrhea, a sense of fulness and depressed feeling after eating, are conditions which may exist for a long time. Hyperacidity with its gastric discomfort may be the first manifestation. Loss of weight, plus a history of digestive disorders, should be looked upon with suspicion. There are sufficient physiological reasons why the alimentary tract has a great resistance to tuberculous infection unless there are considerable alterations in the normal gastric juice. The symptoms enumerated above are reflex because when the lung is inflamed the sensory fibres of the pulmonary branch of the vagus are irritated, and this produces a reflex stimulation of the motor neurons of the vagus, which supply the gastrointestinal canal. The common gastrointestinal symptoms typical of preponderating vagus stimulation are nausea, vomiting, hyperchlorhydria, gastric supermotility, colicky pain, spastic conditions of the intestines, notably spastic constipation, colitis, diarrhea, and intestinal stasis.—*The Significance of Gastrointestinal Disturbance in Early Pulmonary Tuberculosis, S. A. Savitz, N. York M. J. and Med. Rec. July 18, 1923, cxviii, 104.*

Causation of Pulmonary Hemorrhage.—Pulmonary hemorrhages occur more often in males than in females and most commonly between 15 and 25 years of age. Careless treatment with sunlight and artificial quartz light may provoke hemorrhage. With X-ray therapy, if carefully administered, no hemorrhages occur; on the contrary, the accelerated fibrosis caused by X-rays may prevent hemorrhage. Different factors associated with climatic changes have a great influence on the occurrence of hemorrhage. Injudicious tuberculin and partial antigen treatment may cause hemorrhages.—*Zur Entstehung der Lungblutungen, L. Rickmann, Deutsch. med. Wchnschr., March, 1922, xlviii, 284.*

Iodipin in X-Ray Diagnosis of Pulmonary Disease.—Radiographs taken after intratracheal injections of *iodipin* show certain pathological conditions particularly well. In one case the communication between a fistula and the bronchi was shown, and in another patient a bronchial dilatation which was brought out at the base of the lung removed suspicion from the pleura.—*Quelques cas d'utilisation du lipoidol dans le radiodiagnostic des affections pulmonaires, Sergent and Cottenot, Meeting Soc. d. Radiol. Méd. d. France, June 12, 1923, Reported in Presse Méd., June 27, 1923, no. 51, 580.*

Tuberculin in Diagnosis.—This work is a criticism of that of Neustadt and Stadelman. The author states that these two investigators have proved by unscrupulous experiments that tuberculin injections not administered cautiously can produce serious damage. They have not brought forward a single proof of their statement that diagnostic tuberculin injections are dangerous Neither have they proved that subcutaneous tuberculin injections are not reliable and therefore worthless. Still less did they succeed in disproving the specificity of the tuberculin reaction.—*Zur Toxicität verschiedener Alttuberkuline und zur Frage der Tuberkulinshädigung durch diagnostische Dosen, Schwermann, Deutsche med. Wchnschr., August 25, 1922, xlviii, 1126.*

Diagnostic and Prognostic Value of Tuberculin Reaction.—The simple cutaneous reaction of Pirquet is valueless for diagnosis in grown children and adults, but very useful in prognosis. Negative results indicate a condition of anergy. From the manner and time of appearance of the reaction in allergic patients many valuable conclusions can be drawn. The first changes taking place at the site of injection, such as redness and swelling in the first 12 to 24 hours, are to be considered as largely nonspecific. Several hundred cutaneous reactions with *caseosan* have convinced the author on this point. The true tuberculin reaction is expressed by an infiltration of the deeper tissues occurring after 24 hours. The fresher the disease the more rapid and extensive is the reaction; the older the process the slower the reaction. The length of the reaction depends on individual irritability

and also upon the extent of the tuberculous focus, whether the process is active or inactive. In the active cases, however, it comes on more quickly, and so prognosis can be determined. The subcutaneous injection is useful for the diagnosis of activity in doubtful cases, since general and focal reactions follow its application. For this test not more than 1 mgm. O. T. should be used in the case of lung tuberculosis, while 10 mgm. may be used in disease of other organs.—*Ueber diagnostische und prognostische Verwertbarkeit der Tuberkulinreaktionen, C. Moewes, München. med. Wchnschr., May 4, 1923, 564.*

Tuberculin Reactions.—The irregular results obtained at different times and with different preparations of tuberculin are well known. These differences are not due to undernourishment or a decrease in skin sensitiveness. They affect not only the cutaneous test but also the puncture reaction. Even with the weaker tuberculins a reaction occurs with 1 mgm. The puncture reaction is indispensable for discovering a tuberculous infection. In practice cutaneous and percutaneous tests are not satisfactory. The intracutaneous reaction is not better than the puncture reaction.—*Tuberkulinbeobachtungen, K. Peyrer, Beitr. z. Klin. d. Tuberk., April, 1922, li, 283.*

Tuberculin Diagnosis of Surgical Tuberculosis.—The number of chronic inflammations erroneously diagnosed as tuberculosis is much larger than is generally believed, especially in the bones. As a diagnostic aid tuberculin has marked limitations. The Pirquet reaction, the conjunctival reaction, and the intracutaneous and percutaneous reactions, are all positive in a large number of persons without active disease. Some authors rely for diagnosis upon the focal reaction following the subcutnaeous administration of tuberculin, and occasionally to elicit this recourse is made to repeated injection of tuberculin in amounts up to 10 mgm. In this way nonspecific reactions may not infrequently be caused. Friedrich uses not O. T. but the tuberculoprotein of Toenniessen, finding the response much more specific than with tuberculin. Of 24 cases of known tuberculosis 21 reacted positively. Of 14 cases of clinical, supposed tuberculosis all reacted positively, 7 with pronounced focal reaction. Of 21 cases, which were at first thought to be tuberculosis but later by clinical means proved not to be, not one gave a definite positive reaction. On second injection only 6 suffered a rise in temperature. Friedrich believes positive results on second injection may lead to error, and thinks he has found the dosage which is diagnostic on the first injection.—*Tuberkulindiagnostik bei chirurgischer Tuberkulose. (Erfahrungen mit dem Tuberkuloprotein Toenniessen), H. Friedrich, München. med. Wchnschr., April 27, 1923, 528.*

Pirquet Testing.—The Pirquet test is now accepted as a delicate indicator of tuberculous infections in childhood. The test, however, fails in a considerable number of cases of advanced and widespread tuberculous disease. The author has recently developed a technique with which he has not failed to obtain a positive reaction in any case of severe disease proved tuberculous either by the finding of the bacillus or by postmortem examination. *Technique:* 1. Old tuberculin is used instead of the 25 per cent dilution advised by Calmette. 2. The skin is abraded as follows: a small circular area on the front of the forearm is chafed with the sharp point of a darning needle until the epidermis is removed and the pink *cutis vera* is exposed. Care is taken to avoid bleeding. The eye of the needle is now charged with undiluted old tuberculin and pressed into the prepared vascular surface with a rotary motion. This renders more certain the contact of the tuberculin with the skin capillaries and the success of the test is largely dependent on this where the reaction is feeble. 3. The test is read at the end of twenty-four hours, but not pronounced negative until four days have elapsed, as it is quite common for the reactions to be delayed two or three days. This point is usually overlooked. A positive reaction is defined as a "red papule that persists for seven days" or longer. With the above technique the size of the papule generally exceeds 5 mm., but in a few cases it is less than that and yet is to be regarded as positive if it persists for a week. 4. At first, 50 per cent glycerine and water was used as a control but, of late, the author has substituted normal horse serum, the only reason being given is that the latter is a "more severe control." A few cases are cited, showing extensive or acute disease giving a positive test within a few days of death.—*The Cutaneous Tuberculin Test (Pirquet) with Reference to Its Failures in Advanced Tuberculous Disease in Childhood, C. McNeil, Brit. M. J., April 21, 1923, no. 3251, 673.*

Pirquet Reaction with Different Tuberculins.—The skin of the arm is cleansed with alcohol or ether; then the superficial epidermal layers excoriated and tuberculin applied and allowed to remain for 10 minutes. Readings are made 48 hours later. In very cachectic children it may take 6 to 8 days

before a local reaction sets in. A positive finding in a child with cough, emaciation and occasional fever indicates an active tuberculosis. The reaction is considered positive when the papule is not less than 3 mm. in diameter. The size of the papule depends also on the kind of the tuberculin preparation used. O. T. Höchst is the most reliable of all preparations. The diagnostic tuberculin of Moro and *Cutituberculin* are inferior to the Höchst preparation. The intensity of the reaction also depends on the location of the inoculation. It is more intense on the arm than on the forearm and the more distally located papules are smaller than the proximal ones. This difference is due to the more tender skin of the arm, which has a richer lymphatic and blood supply than the forearm.—*Über die Kutanreaction nach V. Pirquet mit verschieden Tuberkulinpräparäten, A. Schreiber, Deutsche. med. Wchnschr., February, 1923, xlix, 178.*

Wildbolz Auto-Urine Reaction.—In 69 cases, in which a year's observation excluded active tuberculosis, the reaction was positive. No more conclusion can be drawn from this reaction than from a positive Pirquet. That specific toxic substances occur in the urine of consumptives, as claimed by Maragliano and Marmorek, is not denied. It is, however, questioned whether they appear regularly enough so that they can be used to determine an active pulmonary tuberculosis, as claimed by Wildbolz.—*Die intracutane Eigenharnreaktion nach Wildbolz und ihr praktischer Wert für die Diagnose der Lungentuberkulose, W. Biese, Beitr. z. Klin. d. Tuberk., July, 1922, lii, 192.*

Specificity of Focal Tuberculin Reaction.—In 178 cases of local surgical conditions in which a diagnosis of tuberculosis could not be definitely established nor could it be definitely excluded, 48 gave a positive focal reaction after the diagnostic tuberculin test. Of these 48 cases tuberculosis could be proved by diagnostic means other than tuberculin reaction in 38 cases (79 per cent). Thirty cases were bone and joint tuberculosis, 3 tuberculous epididymitis and 5 renal tuberculosis. In the 10 nontuberculous cases, which gave a positive focal reaction, the character of the reaction was identical to that of the tuberculous cases, differing in that they required larger doses of 5 to 10 mgm. to provoke reactions. Some of the proved tuberculous cases required doses almost approximating those for nontuberculous cases. On the other hand, numerous nontuberculous cases of osteomyelitis, chronic articular rheumatism, gonorrhoea and syphilis exhibit no signs of a focal reaction, although giving a high temperature reaction. From the above, one must consider it a fact that typical focal reactions after tuberculin injections occur in definitely nontuberculous cases and that, therefore, a focal reaction is not an absolute proof for the tuberculous etiology of the disease, but that in 80 per cent of cases a focal reaction following O. T. injections indicates tuberculosis.—*Zur Frage der Specificitat der Herdreacktion, C. Mau, Klin. Wchnschr., February, 1923, ii, 351.*

Wildbolz Auto-Urine Reaction.—The results in a series of 100 cases were as follows: Forty-four cases of active tuberculosis gave 26 positives. In nontuberculous pulmonary conditions 24 cases gave 14 positives. Twenty-two healthy cases and various diseases gave 11 positives. *Summary and Conclusions:* 1. Healthy persons and those with nontuberculous diseases may show a positive auto-urine reaction. 2. Healed tuberculous cases may show a positive reaction. 3. In anergic cases the test has no practical value, as is proved by inconsistent results obtained from injecting their urines into allergic persons. 4. There were a number of cases in which the tuberculin test was positive and the auto-urine reaction negative, and *vice versa*. 5. The difficulties of preparation make the test impractical for everyday use. 6. The reactions appear to be due not only to the quality of the urine injected but also to the receptivity of the patient. 7. A positive result is not proof that there are antigens in the urine. 8. The reaction is probably due to the hypersensitiveness of the skin; to chemical properties in the urine; or to drugs in the urine. 9. The Wildbolz auto-urine test for active tuberculosis has very little if any significance in diagnosis.—*Significance of the Wildbolz Auto-Urine Reaction in Tuberculosis, with a Report of 100 Cases, M. S. Lewis, Am. J. M. Sci., June, 1923, clxv, 890.*

Wildbolz Auto-Urine Reaction.—The literature is reviewed and the specificity of the auto-urine reaction discussed. The outcome of the reaction is dependent upon various nonspecific moments such as condition of skin, blood content of skin and protein content of urine. The specificity of the reaction could not be determined by histological studies of the infiltrations at the injection site. A summation of antigenic action did not occur when tuberculin was added to the autogenous urine; the urinary component lacked the specific property and acted nonspecifically. The reaction is, therefore, not specific. Concentration was carried out on open water baths. Since the toxins are

heat-resistant and the salt concentration does not suffer changes, the outcome of the reaction is not influenced. Reactions occurring in cases of active tuberculosis revealed that it made no difference whether autogenous urine, or urine from other tuberculosis cases or tuberculosis-free individuals was used. A difference in the sensitiveness of tuberculous and nontuberculous individuals toward autogenous urine, and urine of other tuberculous patients or nontuberculous individuals was not noted. The reaction was positive in cases in which postmortem excluded not only active tuberculosis but the presence of any tuberculosis. The autogenous reaction cannot be considered of diagnostic value for tuberculosis.—*Beitrag zur Wildbolzschen Eigenharnreaktion, V. Kušan, Beitr. z. Klin. d. Tuberk., July, 1922, lii, 177.*

Serological Diagnosis of Tuberculosis.—A serological diagnosis of tuberculosis is possible. In the sera of tuberculous patients measurable amounts of specific antibodies are demonstrable and only possible when defatted tubercle bacilli are employed as an antigen. The author experimented on the complement-deviation test, with Fornet's diagnosticum as an antigen, but it proved less practical than the agglutination reaction. However, the agglutination reaction gave good results, even in cases of surgical and skin tuberculosis, which Wassermann already classified as negative (not anergic).—*Nachtrag zu der abeit. Agglutinations-Versuche mit dem Fornetschen Tuberkulosediagnosticum bei chirurgischer Tuberkulose, Kohler, Klin. Wchnschr., April, 1923, ii, 835.*

New Serum Reaction for Diagnosis of Tuberculosis.—A serum reaction in tuberculosis, similar in principle to the Sachs-Georgi, Meinicke and Dold reactions in syphilis, is described. The antigen is a cholesterolized alcoholic extract of tubercle bacilli. In its preparation the growth of bacilli from six culture tubes of egg medium is extracted for three days with absolute alcohol. The extract is filtered, evaporated on the water bath to one-fourth of its volume, and again restored to 20 cc. with alcohol. To 9 cc. of this product 1 cc. of 1 per cent cholesterol solution in absolute alcohol is added. The patient's serum is inactivated at 55° in the usual manner, and 0.4 cc. is placed in each of three test tubes. Antigen in 2 cc. amounts of 1 to 10, 1 to 15 and 1 to 20 dilution in physiological salt solution is added. Controls are set up as follows: (1) serum plus absolute alcohol diluted with salt solution, (2) antigen plus salt solution, (3) antigen plus a known positive serum, (4) antigen plus a known negative serum. The series is incubated at 37°C. for 4 hours, and then allowed to stand over night at room temperature. The tube contents are then examined with an agglutinoscope. The degree of clouding is expressed as one, two or three plus. One hundred and fifty serums were examined by this method, 27 of them from tuberculous patients. In tuberculosis the results were 92.5 per cent positive. There was 88 per cent agreement with the Besredka complement fixation test.—*Ueber eine neue Serumreaktion für Diagnose der Tuberkulose, Lina Bonacorsi, Ztschr. f. Immunitätsforsch. u. exper. Therap. I. Orig., May 15, 1923, xxxvi, 531.*

Specific Serological Diagnosis of Active Tuberculosis.—*Conclusions:* 1. The serum of the tuberculous is distinctly lipophilic. 2. It requires, therefore, in its antigen the presence of a definite amount of phosphatides. This characteristic places it, in a serodiagnostic sense, in a group with the serum of the luetic patient. 3. The serum of tuberculous subjects differs, however, from syphilitic serum in that it does not react with the lipoid alone but, besides the lipoids, requires still another component in the antigen, a component which is contained in the protoplasm of the tubercle bacillus. 4. The serum of the tuberculous patient differs from the serum of the healthy individual who has received injections of tubercle bacilli or its derivatives in that it requires more lipoids in the antigen to effect a positive serodiagnostic reaction. 5. It is possible, therefore, to make an antigen by previous defatting of the tubercle bacilli and subsequent addition of phosphatides, which antigen will, in tests on the human being, give positive serodiagnostic reactions only with serums which come from individuals who have tuberculous tissue. A positive serological reaction means a definite diagnosis of active tuberculosis.—*Über experimentelle Grundlagen für eine specifische Serodiagnostic auf active Tuberkulose, A. Wassermann, Deutsche. med. Wchnschr., March, 1923, xlix, 303.*

New Light on Ehrlich Diazo Reaction.—Normal and pathological urochrome are identical. The Ehrlich diazo reaction merely indicates an increase in its excretion. The amount excreted is in proportion to tissue decomposition. A small amount is always being formed. In progressive tuberculosis much larger amounts are formed and excreted. The diazo reaction is a measure of tissue decomposition and, therefore, of prognosis. The diazo and permanganate reactions are both expressions of increased urochrome excretion. In advanced renal

disease urochrome may be retained in the body.—*Die Ehrichsche Diazoreaktion im Lichte neuer Untersuchungen, M. Weiss, München. med. Wchnschr., March 30, 1923, 393.*

Involvement of Eye by Lupus Vulgaris.—A patient of thirteen years had large patches of lupus on the face, and on the buttocks smaller patches which improved greatly under treatment. Nine years later the lupus, untreated in the meantime, had involved most of the face and had affected one eye so severely that its removal was necessary. The corneal epithelium had developed papillary projections into the parenchyma, having been modified to form epidermoid epithelium. One tubercle was found in the scleral and one in the episcleral tissue. The general examination showed slightly impaired resonance at the apices, no râles, no bacilli in the sputum, and there was a slight daily fever.—*Lupus Vulgaris with Ocular Extension, W. S. Franklin and F. C. Cordes, Am. J. Ophthalmol, July, 1923, vi, 573.*

Uveitis and Tuberculosis.—In all obscure cases of uveitis tests for tuberculosis should be made, and the possibility of a tuberculous origin ought always to be kept in mind.—*The Etiology of Uveitis, Burton Chance, Am. J. Ophthalmol, April, 1923, vi, 284.*

Tuberculosis of Tonsil.—This condition is not recognizable clinically and is seldom even suspected prior to pathological examination. It is common in advanced pulmonary tuberculosis and tuberculous cervical adenitis in which approximately half of those examined are found involved. The present analysis is based on 400 consecutive tonsillectomies in Glockner Hospital, Colorado Springs, in which careful microscopic study of sections was made, over a period from June, 1921, to December, 1922. The patients are all living and under observation. Seventeen of these patients, or 4.25 per cent, were reported by the pathologist to have shown tuberculosis of the faucial or pharyngeal tonsils. A careful review of these cases showed no characteristics which might serve to identify the tonsils as tuberculous before they reached the microscope. Sixty per cent of the positive cases however gave a history of pulmonary tuberculosis; in 70 per cent of them both tonsils were involved. Altogether, of 25 persons in the series known to have pulmonary tuberculosis, 10 or 40 per cent were found to show tubercles in the tonsils. An analysis of all the tuberculous tonsils showed the cervical glands to be also involved in 50 per cent. Primary tuberculosis of the tonsils may be taken to include all cases in which there is no suspicion of pulmonary disease, although this stand is admittedly arbitrary. The adenoid is rather largely represented in this group, although the total percentage of tuberculous adenoids was lower than that for tonsils (1.8 per cent). No difference in behavior was noted after operation of the cases which had presented tubercles and those which had not; hence, it seems that tubercles in the tonsils are neither clinically recognizable nor clinically important. This, however does not imply any doubt as to the value of tonsillectomy in tuberculous cervical adenitis. According to Dr. Charles T. Ryder, the pathologist, no example of ulcerative tuberculosis was encountered in this series; nor any large areas of caseation or tuberculous infiltration. It was not found practical to stain and examine for tubercle bacilli, but the usual pathological criteria for tubercles were adhered to. —*An Analysis of Some Cases of Tubercles in the Tonsil, W. V. Mullin, J. Am. M. Ass. April 28, 1923, lxxx, 1211.*

Bronchitis Complicating Pulmonary Tuberculosis.—The climate of the British Isles is recognized as one of the most favorable for the production of bronchial catarrh, and particularly for chronic bronchitis. Bronchitis seems to favor the development of tuberculosis, may transform a latent into an active lesion, must be taken seriously when developing after clinical tuberculosis is once established, and is especially unfavorable as a complication of old lesions in middle aged people. Out of 300 patients studied, 50 had a marked tendency to bronchitis. They suffered severely in damp and cold weather, and some were forced to winter on the Italian Riviera. The ordinary case of pulmonary tuberculosis seems to do as well in Great Britain as elsewhere, but the bronchitics do not respond so well either to the Alpine climate or to the better climates of England or Scotland; they do best in the quieter resorts of the Mediterranean littoral or among the foothills of the maritime Alps, where there is a maximum of sunlight, an equable climate neither too dry nor too humid, dust at a minimum and surroundings pleasant and comfortable. The strain of a high altitude adversely affects the right heart. The most difficult case to handle is that of widespread pulmonary fibrosis complicated by bronchitis; this is usually an old case with history of a winter cough for some years. Emphysema and an overtaxed right heart are usual accompaniments. Previous symptoms may have been slight, but if such cases were diagnosed earlier they would

recover without the extensive fibrosis. In England a vague deterioration of health in early life should be suspected as being of tuberculous origin. If the X-ray shows the presence of small woolly opacities in the middle portion of the lung, with enlarged ill-defined hilum shadows and some radiating fibrosis, if Pirquet's test is positive in a dilution of 1–100, if the sputum contains albumin although no tubercle bacilli are present, if the blood pressure is low (110), and if at the same time the urine is deficient in free acid, a diagnosis of pulmonary tuberculosis can be made in the absence of any definite physical signs. The eradication of catarrhal conditions in the nasopharynx, trachea and bronchi, which tend to recur frequently in the course of pulmonary tuberculosis, is an important part of treatment. Anticatarrhal vaccines may be useful, as preventives of bronchitis, but are of slight value in treatment, unless given early in the disorder and as early in life as possible, before local tissues damage is too great and before the body in general has ceased to react with ease to stimulation.—*The Association of Bronchitis with Pulmonary Tuberculosis, J. C. McClure, Tubercle, April, 1923, iv, 293.*

Chronic Pseudotuberculous Laryngitis Caused by New Species of Yeast.—A pharyngo-laryngeal affection lasting nearly a year was associated with painful sensations extending to the breast, continual paroxysms of coughing which prevented swallowing, emaciation, weakness, and an appearance suggesting advanced tuberculosis. There was abundant expectoration of material resembling egg-white. The free border of the epiglottis and the anterior surface of the arytenoids showed the chief lesions, which resembled places that have been touched with silver nitrate pencils. The sputum contained yeast cells and a pseudomycelium. The best culture medium proved to be carrots, and the optimum temperature lay between 28° and 32°C. A pure culture inoculated under the skin of a guinea pig produced a nodule which did not reappear after excision. Two guinea pigs that received intraperitoneal injections of this culture died in 38 and 42 days. Autopsy disclosed nodules, especially in the lungs, from which cultures of the yeast were made. It belongs to the genus *Cryptococcus*, and appears not to have been known before. It has been named *Cryptococcus laryngitidis*, n. sp. The patient was completely cured by treatment with potassium iodide, which, badly borne at first, was interrupted by many abortive measures before the successful treatment was resumed.—*Laryngite chronique pseudo-tuberculeuse d'origine mycosique due a une levure nouvelle, A. Sartory, Petgès and Claqué, Compt. Rend. Soc. d. Biol., June 16, 1923, lxxxix, 179.*

Circulatory System in Tuberculosis.—There is practically no problem as far as the heart is concerned in the early cases of tuberculosis, but the problem grows and becomes a serious one as the disease advances, with its prolonged toxic action and its tissue destruction. The particular group of symptoms that destroy the tuberculous patient are those which are due to toxins. Therapeutic effects in advanced disease should be advanced first, toward warding off the toxicity and, second, toward improving the circulatory system when it is disturbed. Rest is the greatest of these. Since the main heart condition, met with in tuberculosis and is directly traceable to the disease, is of the degenerative type there is little in the way of therapy that can be applied when once the organ begins to show signs of weakening. Digitalis in large doses sometimes helps. The conditions of toxemia are accompanied by an increase in the acid radicles in the body cells and a decrease in free water in the body. Alkalies are indicated.—*The Circulatory System in Tuberculosis, F. M. Pottenger, N. York M. J. & Med. Rec., May 2, 1923, cxvii, 541.*

Successful Removal of Tuberculous Spleen.—A tedious complex of symptoms following measles and bronchopneumonia in a fifteen year old girl included enlargement of the spleen. Malaria was suspected and treatment given, but as the patient's condition continued to grow worse the spleen was removed by transverse incision. A large caseous suppurating mass was found. Recovery followed the operation.—*Abcès froid de la rate, Lecène, Proc. Soc. d. Chir., Paris, June 27, 1923, Reported in Presse Méd., July 4, 1923, no. 53, 589.*

Tuberculous Peritonitis Complicating Intussusception.—A girl, aged 11 years, experienced recurring ileocecal intussusceptions, necessitating five operations before she remained free from attacks. At the second operation, twenty-nine days after the first, the intestines were found to be thickly covered with miliary tubercles and the mesenteric lymph nodes much enlarged. At the third operation, three months later, adhesions were found, but the tubercles had completely disappeared and were not seen again at the two subsequent operations, six and eight months later, respectively. At the final operation a lateral anastomosis of the ileum and cecum was performed and the patient remained well up to the last consul-

tation, about a year later. The rationale of surgical procedure in this case is discussed.—*Recurring Ileocecal Intussusception, Report of a Case Complicated by Tuberculosis of the Intestine, M. Thorner, J. Am. M. Ass., April 14, 1923, lxxx, 1063.*

Disappearance of Tuberculous Peritonitis after Use of Radium.—A boy, aged 3, was operated on, following a diagnosis of malignant tumor of the testicle, with large metastasis in the abdomen (presumably in the retroperitoneal lymph nodes). A large abdominal tumor was easily palpable. After the linea alba had been divided it proved impossible to find the free abdominal cavity at any point; everywhere a grayish mass was encountered. It seemed to be a thickened, infiltrated omentum, but it may also have consisted of thickened parietal peritoneum, plus omentum. Nine radium tubes each containing 1 cgm., and one tube containing 2 cgm. of radium, were inserted into the mass; they did not seem to penetrate into a free peritoneal cavity and there was nothing to indicate that the intestine or stomach had been wounded. They remained *in situ* twenty-four hours. The right testicle and cord were removed and the divided end cauterized at the level of the inguinal canal. When the testicle was incised, both it and the epididymis were found to be of normal size and consistence. The thick layer of surrounding tissue was shown to be tuberculous structures derived from the tunica vaginalis and showed no signs of necrosis. A few tissues, removed from the laparotomy opening, also showed characteristic tuberculous structures. A week later the temperature became normal and the wound had healed by first intention. The tumor had entirely disappeared. Two weeks later the mother reported the patient normal in all ways. He died eight months later from acute otitis media and a mastoid abscess. Necropsy showed purulent meningitis. The lower lobe of the left lung was covered with fibrin but there were no enlarged hilum nodes. No fluid was found in the abdominal cavity. The retroperitoneal and mesenteric nodes formed a caseous packet the size of a child's hand. Small tubercles were scattered over the under surface of the diaphragm and the surface of the liver. The spleen was enlarged and densely studded with grey tubercles. Death had evidently been due to the acute otitis media going on to meningitis. Although the radium did not altogether banish tuberculosis from the abdominal cavity, its effect was so great and rapid as to astonish all who followed the case. The microscopic examination of the testicle showed how the swelling had formed; through a patent processus vaginalis the tuberculosis in the peritoneal cavity had extended down into the tunica vaginalis, infecting the serosa of the processus and tunica vaginalis which became converted into a thick layer of tuberculous granulation tissue. If the case had not been diagnosed malignant and practically hopeless the lad would never have received such a large dose of radium without a lead filter.—*Disappearance of Tuberculous Peritonitis Eight Days after the Use of 11 Cgm. of Radium, P. Bull, Tubercle, July, 1923, iv, 450.*

Direct Sunlight in Tuberculous Peritonitis.—For several years good results have been obtained by opening the abdomen as wide as possible, and exposing it to the sun for 15 to 20 minutes between nine and eleven o'clock, after which the wound is closed. In 24 cases recently treated 23 cures were obtained. Recoveries have followed in desperate cases, and considerable improvement has taken place even in patients with advanced pulmonary tuberculosis. There are no contraindications and the method is never dangerous.—*Laparotomie et heliotherapie combinées dans le traitement des péritonites tuberculeuses, Temoin, Meeting Soc. d. Chir., Paris, July 4, 1923, Reported in Presse Méd., July 7, 1923, no. 54, 602.*

Neglected Form of Tuberculous Mesenteric Lymphadenitis.—This is a common disease of children and young adults in which there is enlargement of the mesenteric lymph nodes, generally of the lower ileum, more rarely of the cecum and ascending colon. The nodes are seldom larger than a pea, are always soft, and not inflamed externally. The peritoneum is not involved, but the mesentery may be thickened. There is often clear fluid in the abdomen, sometimes enough to fill the pelvic cavity. The nodes are smooth, and are visible as small reddish areas scattered thickly through the mesentery, more numerous near the root. Histological examination shows simple hyperplasia in some nodes, tuberculous tissue in others; inoculation into guinea pigs of some, but not of all nodes, produced tuberculosis, with type of bacillus undetermined. It seems, from postmortem records of large institutions, that the disease is more prevalent in some regions than in others, and the suspicion arises that the disease may be of bovine origin due to neglected milk. The symptoms frequently lead to a diagnosis of appendicitis. In some cases the disease runs an acute course, probably in most cases it is chronic. There is generally slight fever, loss of weight and strength, gastrointestinal disturbance and headache. Cases discovered by laparot-

omy usually recover, possibly as a result of appropriate medical and hygienic treatment. Cases are seldom recognized during operations because the disease is little known to surgeons.—*Surgical Significance of Mesenteric Lymphadenitis, L. Freeman, Surg. Gyn. and Obst., August, 1923, xxxvii, 149.*

Successful Surgical Treatment of Ileocecal Tuberculosis with Perforation into Urinary Bladder.—A girl, 17 years old, developed high temperature, diarrhea and pain in the kidney region. There were a few râles in one lung, and numerous B. coli in the urine, but no tubercle bacilli. A diagnosis of tuberculous colitis, with perforation into the urinary bladder and double nephritis was made. Palliative treatment was instituted, and the patient improved, with disappearance of intestinal and bladder symptoms. Relapse of the condition occurred one and two years later, when an exploratory laparotomy was performed. The cecum and the ileum at the ileocecal junction were adherent to the parietal peritoneum, and the cecum was adherent to the posterior surface of the bladder at one point. Twelve centimetres of the ascending colon, with the cecum, and 8 cm. of the ileum were resected, and a lateral anastomosis made. The resected intestine showed tuberculous ulcerations in the mucosa, with infiltration around them. The patient made an uneventful recovery and is in perfect physical condition now, two years after the operation. The author advises operating early in all cases of tuberculous enteritis without extensive pulmonary involvement, and making extensive resection of the involved intestinal segments, as this method promises a real cure if there is no tuberculous involvement of other organs.—*Ileozökaltuberkulose mit Perforation in die Blase, Reh, Deutsche. med. Wchnschr., May, 1922, xlviii, 692.*

Tuberculosis of Rectum.—Tuberculosis within the bowel occurs rarely in the miliary form, but presents itself more commonly as ulcerative and occasionally as hypertrophic changes. The former is usually secondary to tuberculosis of the genital organs; this may progress to the ulcerative form. The latter form is usually secondary to pulmonary tuberculosis. In the rectum the ulcers spread in all directions, while in the sigmoid they tend to encircle the bowel. The whole mucosa of the bowel is pale and anemic, except closely around the tubercle, where a ring of congestion appears. When ulceration develops small tubercles are to be seen in the necrotic base. Where there are several ulcers, sinuses frequently connect them beneath the mucosa. Perforation is rare. Accompanying the ulceration are lumbar or sacral ache, rectal tenesmus, and bloody or mucous diarrhea. If the bleeding is oozing in character it may be persistent, and considerable blood is accumulated and retained in the rectum, giving a tar like appearance to the stool. The diarrhea is slight at first but increases as the ulceration progresses, even to thirty or forty evacuations daily. Stenosis and obstruction may result. Proctoscopic examination is important for a differential diagnosis. The finding of tubercle bacilli in the scrapings is a great help. It is probable that tuberculous ulceration of the terminal bowel is much less frequent than is usually expected. Rectal ulcers of any type are intractable and therefore usually believed to be tuberculous. The same hygienic conditions govern the treatment of rectal tuberculosis as the same disease in any other part of the body. Salicylate of bismuth is often required for the diarrhea. When the ulcers can be found with the proctoscope they should be cocainized and cauterized with potassium permanganate in crystalline form. There may be a hypertrophy instead of ulceration and this may be easily confused with syphilis or scirrhus cancer of the bowel, with similar symptoms and a proliferating stenosis. The diseased area should be cauterized. Tuberculin may be of advantage. If stricture occurs a removal of the diseased area by resection is the only treatment.—*Tuberculosis within the Rectum. C. V. Drueck, N. York M. J. and Med. Rec., June 6, 1923, cxvii, 690.*

Abortive Tuberculosis of Hip.—There is considerable question whether abortive types of hip joint tuberculosis occur, but theoretically it seems possible that a cure of such a lesion might be effected in its early stage. Nontuberculous synovitis of the hip joint is rare, and when present is referable to injury or focal infection. Other conditions that would have to be ruled out are acute arthritis which is rare in the hip, and pseudocoxalgia, Perthe's or Legg's disease, which is differentiated clinically and by the roentgen ray. Other possible simulants are coxa vara, epiphyseolysis coxae, fracture of the neck of the femur, arthritis deformans, osteomyelitis and arthritis deformans. A primary tuberculous synovitis may not be demonstrable by X-ray. Two cases, assumed to represent abortive hip joint tuberculosis, are reported. The first a boy, aged 2½ years, had lameness of the right leg and pain above the knee. Physical findings included also flexion of the knee, eversion of the foot, obliteration of the posterior gluteal sulcus, limitation of motion of the hip, spasticity of the related

muscles, but no shortening of the leg. The roentgen ray report was negative and the Pirquet test was positive in twenty-four hours. With rest and hygienic treatment, complete recovery occurred within six weeks after the onset. The second child, aged 3, presented findings similar in many respects to the first, the Pirquet test being positive here also. Six weeks after the onset the recovery was complete. In this case milk was previously taken from a herd, of which two cows were found to be tuberculous. In favor of a diagnosis of tuberculosis in both cases were the etiological factor, typical history and symptomatology, typical objective signs, positive Pirquet tests (in children of these ages the positive skin test should have considerable weight), and lack of grounds for any other diagnosis; opposed were the lack of bacteriologic proof of the organism, and the course and outcome.—*Abortive Type of Tuberculous Hip Joint Disease, A. L. Nielson, J. Am. M. Ass., May 19, 1923, lxxx, 1442.*

Tuberculosis of Sacroiliac Joint.—The tuberculous nature of some cases of sacroiliac disease was first recognized about a century ago. Until Picqué described his method in 1909, cases were surgically treated by trephining and scraping with only fair results. Picqué introduced the principle of the removal of the portion of the ilium overlapping the joint and the methodical following up of the disease from without inwards. *Anatomy:* The sacroiliac joint is a true joint provided with a synovial membrane; but the size of the cleft varies at different ages, and it may be partly or completely obliterated by fibrous bands passing between the cartilaginous plates. The ligaments are such that they effectually shut in the joint posteriorly and prevent the spread of pus backward, and at the same time their wide attachment prevents excessive movement and provides a stout pelvic brace after extensive resection of bone. The very small movement which the joint possesses is increased in pregnancy. No muscles act directly on the joint which is only indirectly affected. The nerve roots concerned with the nerve supply of the joint include practically all the roots concerned in the formation of the lumbosacral plexus. *Pathology:* The disease is rare compared with tuberculosis of the spine and hip, and particularly so in children. The age incidence is usually between 20 and 30 years. The primary focus is invariably in the bone, usually the sacrum. Tuberculous caries ensues, extension to the joint follows, and the other bone is then attacked. Continuation of this process results in the formation of an abscess, which follows the line of least resistance. Intrapelvic abscess is commoner than extrapelvic, and the pus may follow the psoas sheath downward and upward or may pass into the thigh or even reach the buttocks. Neglected cases usually discharge externally through lengthy and tortuous sinuses. *Symptoms:* Often a history of injury or sprain or a limp may be the first sign. More frequently the initial symptom is pain, usually associated with weakness of the limb. The pain may be localized, or radiate to the hip or knee or lower part of the back according to the nerve-twigs affected. It is usually worse at night and increased by any movement of the joint or neighboring structures. Tenderness on direct pressure over the joint is a valuable sign. Muscle spasm follows which may lead to the atrophy of the muscles, most obvious in the flattening of the buttock and loss of gluteal folds. *Diagnosis:* There is no sign pathognomonic of this disease. The most valuable early sign is tenderness on pressure over the joint. The X-ray lends valuable aid and should be repeated if negative in suspected cases. The presence of an abscess renders the diagnosis a simpler matter although the abscess may point a considerable distance from the joint. This disease must be diagnosed from acute infections (pyogenic or gonorrheal) and sprains, affections of the neighboring bones and joints and from affections of the nerves, such as the sciatic, and tumors of the cauda equina. *Treatment:* Picqué's method is advised, which is based on the following principles: (1) approach to the joint by cutting away the posterior overlapping portion of the ilium; (2) resection of as much of the sacrum as is necessary to completely evacuate any intrapelvic abscess; and (3) methodical curettement so that a smooth granulating surface may be formed without pockets or sinuses. Fairly complete details of the technique are given and this more radical method of treatment is shown to yield much better results than the older operations of trephining and scraping.—*Tuberculosis of the Sacro-Iliac Joint, H. C. W. Nuttall, Lancet, April 28, 1923, cciv, 839.*

Tuberculosis of Hip.—Treatment should always aim to produce a movable joint after the inroads of tuberculosis. The X-ray is invaluable in determining the location and extent of the lesion. The earliest form, the femoral, may be followed by slight rarefaction of the epiphyseal line to complete destruction and dislocation of the femur. Hip disease frequently starts in the acetabulum and exhibits, first, rarefaction of the acetabulum which deepens if treatment is not adequate. The head of the femur becomes eroded and flattened, fitting into

the irregular cavity, or the superior portion of the acetabulum disappears from pressure and absorption, presenting the so called "traveling acetabulum." If the head, after being in close contact with the cavity of the acetabulum, is dislocated by force, it subsequently dislocates upward, and, the head being completely absorbed, we have the upper end of the femur extending some distance above the femur cavity and a resemblance to the pathological entity seen after acute epiphysitis in its last stage. A clouding of the X-ray negative over a joint usually indicates involvement of the soft parts. Primary synovial involvement without osseous involvement is difficult of demonstration in roentgenograms. Tuberculosis of the joints is always secondary to a focus elsewhere in the body. In cases of cold abscess the exploratory puncture and laboratory examinations should always precede evacuation. Traction and fixation offer the best method of treatment, which if adequate prevents absorption of the head and the rarefied areas gradually fill in with lime salts. Bed traction is employed for a short time only. Any deformity of the hip, or exacerbation requires bed treatment. The traction fixation splint which is described in detail is worn for about a year; from this the patient advances to the convalescent brace. Constitutional treatment is most important. Calcium salts in some form combined with thymus gland is at present the most rational drug therapy. If conservative treatment is instituted early and efficiently carried out, operative measures will be much less frequently needed. A complete recovery produces a joint that is normal in all respects. Forcible straightening by itself is often all that is needed, if applied at the right time and in the proper manner, for the relief of abduction and flexion deformity. The patient should be completely anesthetized and the hip, by a single motion, be brought into its proper position; this should not require much force. This should be followed by extension for two or three weeks. Osteotomy gives very satisfactory results in osseous ankylosis and the Barton or intertrochanteric operation is productive of the best results. After osteotomy has been performed the limb is ankylosed in a corrected position. Aspiration is of value only as a diagnostic measure. If the fluid be sterile incision and curettement are indicated. In infected cases drainage should be instituted in addition. Erasion of the joint is of value in children where the inroads of the disease are not severe. The diseased part should be located with the rays and removed with the curette, flushing with a hollow spoon, employing a solution of bichloride of mercury. Recovery frequently occurs without marked deformity. *Conclusions:* 1. Few specimens of tuberculous hip are available for laboratory examination, so that one needs to study the pathology of the affection from a series of X-ray plates. 2. Moderately serious injuries are more favorable to the development of the disease. 3. Tuberculosis of the hip is usually secondary to disease in the epiphysis. 4. In the hip joint the disease usually begins in the epiphyseal line of the femur and later extends to the joint. 5. The disease may begin in the acetabulum and extend into the joint. 6. Hip disease is usually, if not always, secondary to a lesion elsewhere in the body. 7. Fixation combined with traction offers the best method of treatment. 8. Constitutional treatment should not be neglected.—*The Pathology and Treatment of Tuberculosis of the Hip Joint, J. K. Young, Bone and Joint Surg., April, 1923, v, 313.*

Skin Temperature over Tuberculous Bones.—The skin temperature is increased over bones with active tuberculosis, as can be easily seen by comparing the temperature of the skin over the diseased bone with that over the bone on the opposite, healthy side. The difference is so pronounced that it can be used for early diagnosis in bone disease, and for recognition of activity in disease of established tuberculous nature. Contrary to first expectation, injection of tuberculin, with consequent focal reaction, does not lead to increased difference between the two sides. In general, the temperature difference is actually decreased, although the skin temperature rises on both sides as part of the general reaction. Apparently, the rise in temperature is actually greater in the skin on the healthy side. This is attributed to a greater capability of the capillaries on that side for dilating in the course of the febrile reaction. The capillaries on the diseased side have already used up part of their capacity for widening.—*Ueber die Hauttemperatur tuberkulös-erkrankter Gelenke, C. Mau, München. med. Wchnschr., May 4, 1923, 562.*

Activation of Bone Tuberculosis by Salvarsan.—A diagnosis of *erythema induratum* (Bazin) was made in the case of a 16-year school girl, presenting a deep ulcer of the leg with indurated walls. Neosalvarsan and salvarsan in doses of 0.15 to 0.3 gm. were administered over a course of 3 months, with practically complete healing as the result. During treatment pain developed in the right knee; surgical examination disclosed *hydrops tuberculosus*. It was considered to be a lighting up of a quiescent

condition due to the action of the salvarsan.—*Reizung einer ruhenden Gelenktuberkulose bei einem Fall von Erythema induratum (Bazin) durch Salvarsan, F. Wirz., München. med. Wchnschr., March 30, 1923, 397.*

Origin and Spread of Renal Tuberculosis.—In the great majority of cases of tuberculosis of the urinary tract the disease extends from the kidney downward. Tuberculosis of the bladder usually heals as soon as the original focus in the kidney is removed by nephrectomy; prolonged or intensive local treatment of a tuberculous cystitis is therefore irrational. If tubercle bacilli are found in the urine of a woman, renal tuberculosis may be safely diagnosed forthwith, but in man the bladder infection may infrequently be secondary to a tuberculous epididymitis or prostatitis. When one kidney is diseased, secondary retrograde infection of the other may occur in old-standing cases, due to inflammatory obstruction of the ureter and regurgitation of infected urine. Primary infection of the bladder never occurs. The kidney is infected by the blood. According to Cohnheim's theory, renal tuberculosis is a so called elimination disease, the bacilli passing from the blood through the glomeruli and uriniferous tubules into the renal pelvis. Some of the bacilli were supposed to adhere at points to the walls of the tubules, creating foci located usually in the medulla, pyramids or papillae. The elimination process is supposed to be a protracted one, resulting in lesions in different papillae. This theory is unfavorably criticized, because many patients keep well after a nephrectomy, which would not be true if bacilli were being eliminated continuously; further, in such an event the bones as well as the other kidney should become involved. Examination of a series of kidneys has pointed to the following as the most likely mechanism: First, there is the primary hematogenous infection, certainly due in most cases to an infected embolus. This is usually localized in a pyramid, either near the surface or deeper. From this focus there develops a cavity filled with tubercle bacilli. If small and deep-seated, the cavity may communicate with the renal pelvis by a fistulous track, but if larger and more superficial the communication may be direct. In either case, the rupture of the cavity leaves an ulcer in the papilla involved and perhaps also in the adjoining papilla. In the necrotic tissues lining the ulcers there are innumerable masses of tubercle bacilli which persist as long as the ulceration is acute and progressive. The urine becomes intensely infected, and this results in involvement of other papillae, walls of the calyces and the lining of the renal pelvis; progressive ulceration of the papillae follows but the walls of the calyces and renal pelvis are more resistant. Infection of the ureter and bladder occurs in the same way. It is probable that the tubercle bacilli spread from the small superficial foci of infection by the lymph passages outward to the capsules of the kidney; later, when the uriniferous tubules become blocked, retrograde extension may take place along these structures and along the blood vessels. Bacilli are most numerous in the urine in the early stage of the disease and at this time pus cells are less numerous; in old cases pus cells may be abundant and bacilli may be few or impossible to demonstrate, due to the fact that the walls of the ulcerating cavities are sclerotic. To sum up, the primary kidney focus is probably hematogenous, single and unilocular; secondary dissemination is urinogenous.—*The Diagnosis and Treatment of Tuberculosis of the Kidney and the Urinary Tract, G. Ekehorn, Tubercle, May, 1923, iv, 337.*

Nephrectomy Followed by Insufficiency of Remaining Kidney.—A patient whose right kidney was removed for tuberculosis had, previous to the operation, excreted by the healthy kidney 16.64 gm. and by the tuberculous one 2.39 gm. of urea per litre. Nevertheless, the patient could not survive, showing that the resistance of a kidney is never known in advance.—*Insuffisience rénale après néphrectomie pour tuberculose, Thevenot and Patel, Meeting Soc. Franc. d. Urol., June 11, 1923, Reported in Presse Méd., July 14, 1923, no. 56, 620.*

Early Diagnosis of Renal Tuberculosis.—Palpation of the ureters through the vagina or rectum is not reliable unless the case is very advanced. Demonstration of tubercle bacilli in the urine is not conclusive because the renal epithelium is permeable to tubercle bacilli from some other source in the body, without undergoing any pathological changes during their passage. The progressive tendency of the disease and, above all, cystoscopic examination are of greatest value. The tuberculous changes in the bladder are characteristic as to their form and location. Renal pyuria and hematuria are seen. The most striking changes are at the ostium, which is inflamed and ulcerated. Ulcerations have a crater-like appearance. There are hyperemic foci and lenticular nodules in the mobile parts of the vesicle wall. There may also be typical tuberculous ulcers and granulomatous formations. These changes at the ostium are not seen in any condition other than tuberculosis.

One should be guarded in diagnosis if only one of the enumerated signs is present. Several or all are necessary to establish a definite diagnosis. The trigone always has its normal appearance, except in very severe cases, when it also may become affected. The secondary bladder tuberculosis appears early after the onset of the renal disease and is, therefore, a valuable diagnostic point for detection of renal tuberculosis. The trigone alone is the only part of the bladder that is not affected and is, therefore, of great differential diagnostic value.—*Die Frühdiagnose der Nierentuberkulose, A. Hübner, Deutsche. med. Wchnschr., May, 1923, xlix, 574.*

Urogenital Tuberculosis in Tabetic Patient.—Symptoms of the tabetic bladder are antithetical to those of tuberculous cystitis. No other case of this sort has been found reported. The patient, a man, aged 50, had to be catheterized because of a five days' retention of urine. Previously there had been pain and burning on urination, hematuria and tabetic symptoms. During the previous year he had experienced pain at the beginning of micturition, difficulty in starting the stream and, at intervals, complete retention; he had never had any incontinence. Hematuria had been present at intervals for eight years. Clinical findings were those of syphilis, with genitourinary tuberculosis. The bladder held as much as 40 ounces of urine.—*The Antithesis of Urogenital Tuberculosis in a Tabetic Patient, V. F. Marshall and G. W. Carlson, J. Am. M. Ass., June 23, 1923, lxxx, 1844.*

Nephrectomy Followed by Generalized Tuberculosis.—A woman who had Pott's disease in 1913 developed renal symptoms in 1922. The right kidney was healthy, and the left, badly diseased, was removed Febrnary 2, 1923. At the end of the month pulmonary lesions appeared and ran a rapid course. It is difficult to decide from statistics when operation is indicated in renal tuberculosis if earlier lesions have occurred. Careful search should be made for lesions in evolution before operating, but even if other lesions are not found signs of a renal granulitis are a warning to wait.—*Generalisation tuberculeuse après néphrectomie pour tuberculose rénale, Thevenot, Meeting Soc. d. Chir. d. Lyon, June 7, 1923, Reported in Presse Méd., June 16, 1923, no. 48, 545.*

Inadequacy of Ambard's Constant as Evidence of Kidney Involvement in Tuberculosis.—A patient, whose condition was first manifested by a periureteral abscess, was found on examination to have a bilateral bacillosis and a normal Ambard's constant. A year later tuberculosis of both kidneys could be asserted and the constant was still normal. Ureteral catherization should never be omitted on the evidence of a normal constant. Alone, it should not decide either for or against operation.—*Constante d'Ambard et tuberculoses rénales bilaterales, Darget, Meeting Soc. d. Méd. et. Chir. Bordeaux, June 15, 1923, Reported in Presse Méd., August 1, 1923, no. 61, 679.*

Tuberculosis of Adrenals.—Before Addison's time little was known about the adrenals. Most investigators agree that 80 per cent of cases of Addison's disease reveal tuberculous changes in the adrenals. In the majority the involvement is confined only to the adrenals and in many cases the primary focus of infection is in the adrenals. Two series of cases were investigated by the author. In the first series, of 20 tuberculosis cases that came to autopsy and among which were 17 cases of generalized miliary tuberculosis, 14 showed miliary tuberculosis of the adrenals. The right adrenal was more frequently involved than the left. The second series of 65 cases, mostly of renal tuberculosis that came to postmortem, showed in 27 both adrenals affected, in 26 only the right adrenal and in 12 only the left. The miliary tubercles are equally distributed in the cortex and the inner layer of the gland. The accessory cortical nodules of the adrenals show the miliary tubercles quite often. The miliary tubercles are of two kinds. One is uniformly caseous, the other shows the type of the epithelioid giant cell tubercle. There are also mixed forms. Giant cells are more numerous in older individuals. Tubercle bacilli are very numerous in the uniformly caseated foci. The chronic type of adrenal tuberculosis was always a secondary hematogenic tuberculosis following a primary aerogenous tuberculosis. Chronic tuberculosis of the adrenals is less frequently observed than the miliary type. The tuberculosis of adrenals is apparently always a hematogenous infection.—*Zur Genese der Tuberkulose der Nebennieren, F. Schwarz, Ztschr. f. Tuberk., December, 1922, xxxvii, 169, and January, 1923, xxxvii, 271.*

Fibrocaseous Tuberculosis of Adrenals.—A woman of 30, in whom Addisonian skin signs had existed for 3 years, had the adrenal parenchyma completely obliterated by tuberculous changes. Among the connective tissue, often undergoing hyaline degeneration, there were tubercles in different stages; caseous, sclerocalcareous or fibroid nodules. The nerve tissues, apparently un-

changed, persisted in the fibrous shell. The only clinically existent tuberculosis was an arthritis of one knee. The patient had been given suprarenal extracts in large doses for a long time.—*Maladie d'Addison par surrénalite sclero-caséeuse, Perrin and Morlot, Meeting Soc. d. Méd. d. Nancy, May 9–23, 1923, Reported in Presse Méd, June 16, 1923, no. 48, 547.*

Pigment Production in Addison's Disease.—Small pieces of skin of patients dying of Addison's disease darkened rapidly when placed in adrenalin solution or in an alkaline solution of tyrosine. Very little darkening of other skin took place under the same conditions. The darkening was not the result of mere inhibition, but of a marked increase in the pigment granules in the basal layer. Its occurrence is to be attributed to an increase in oxidase, rather than to an increase in oxidizable substances. There are cases of Addison's disease in which increase of pigmentation does not occur; these are cases of low oxidase content in the skin.—*Ueber die Pigmentbildung bei der Addisonschen Krankheit, A. Bittorf, München. med. Wchnschr., February 23, 1923, 230.*

Gynecological and Obstetrical Tuberculosis.—Primary genital tuberculosis may be acquired in a number of ways, such as from infected douche nozzles, coitus with tuberculous men whose spermatic fluids contain bacilli, septic instrumentation and dressings applied to vaginal abrasions. Genital tuberculosis is more frequent in the female than the male. The vulval lesions closely resemble tuberculosis of the skin of other parts of the body. They may be ulcerative or hypertrophic. The onset is slow but progressive. There may be an ulcer at first, or a preceding tumor, pain and discharge when ulceration begins, with more or less pruritis. In the hypertrophic variety there may be only discomfort from the enlargement. The ulcers do not usually bleed easily on touch; they are frequently covered with a necrotic layer and show no tendency to heal. Contact ulcers may form on the other side. They may extend in any direction and form fistulae with neighboring hollow viscera. Tuberculosis of the cervix may be ulcerative, vegetative and miliary. The ulcers may be small and localized or large and involving the vaginal mucosa and having deep undermined edges. To differentiate it from cancer, the disease is much slower, the edges are never elevated or indurated, the floor is soft and does not bleed easily. The microscope will always settle the question. The vegetative and ulcerative types are but seldom recognized until ulceration has developed. The uterus is the second most frequent site of genital tuberculosis, the endometrium being the usual site of disease, and is practically always secondary to a focus in the fallopian tubes. Pain, tenderness over the uterus, with a leucorrheal discharge, moderately profuse at first, later becoming purulent with perhaps an occasional cheesy particle, constitute the major symptoms. The fallopian tubes are involved rather frequently but the ovaries relatively infrequently. The infection is usually secondary. The Johns Hopkins reports show that 10 per cent of all salpingitis cases are tuberculous. With practically all tuberculous tubes there is an associated perioöphoritis due to extension by continuity and from infectious tubal contents exuding from the fimbriated extremities which commonly remain patulous. As a result, cysts and chronic hypertrophic inflammatory oyster-like ovaries develop. The symptoms of tuberculous salpingitis are by no means characteristic. The chronic stage is usually traceable to an acute attack, but frequently the disease follows an almost chronic course from the beginning. The salpingitis is frequently bilateral and causes sterility. On bimanual examination the tubes may be palpated on each side of the uterus, or the tubes, ovaries and uterus may appear as a pelvic mass, or there may be no palpable condition and only at operation will diagnosis be made by studded peritoneum. Diagnostic tuberculin may be used but not at the time of the menses. The final outcome of operated cases is less favorable than that of other pelvic infections. The usual bad outcome of pregnancy in tuberculous women is well known. The Abderhalden test for early pregnancy gives a positive reaction in nonpregnant cases of pulmonary tuberculosis. There have been only 4 undoubted cases of hereditary tuberculosis reported in the literature. Pulmonary tuberculosis seems to have no influence on the course of pregnancy. Lactation exerts an unfavorable influence on the course of pulmonary tuberculosis. In tuberculous women the complications of labor should not be allowed to advance. Intervention should be employed considerably earlier in tuberculous women than in the nontuberculous; the earlier the intervention the better the prognosis. The most difficult point to determine is what to do when the lesion is quiescent. It is impossible to foretell which case will do well but it is not justifiable to advise induction of abortion in all cases. If any complications arise before the fifth month it is wise to terminate the pregnancy.—*Gynecological and Obstetrical Tuberculosis, V. A. Funk, Am. J. Surg., April, 1923, xxxvii, 83.*